

## 7.7.6 Te noho wātea o te tupu orotā ā-takiwā whānui / Region-wide exclusion pest plant

Giant hogweed is not currently known to be present in the Tāmaki Makaurau / Auckland region. Early intervention in response to an incursion is likely to be a cost effective approach to prevent extensive spread and impact. Furthermore, Auckland Council is appropriately placed to undertake such management given the personal protective equipment and technical knowledge required to safely manage this plant to avoid severe chemical burns.

### 7.7.6.1 Giant hogweed (*Heracleum mantegazzianum*)

Also known as: cow parsnip, giant carrot.

Giant hogweed is a perennial herb which can grow up to 5m tall, has large serrated leaves and produces large clusters of green or white flowers. It is capable of forming dense infestations along riparian and forest margins, suppressing native vegetation and exposing banks to erosion during periods of seasonal dieback. Contact with the plant can cause photodermatitis in humans often resulting in severe reactions, including blistering and lesions requiring medical treatment.



Elaine Iddon

**Objective:** over the duration of the plan Auckland Council will exclude giant hogweed (*Heracleum mantegazzianum*) from establishing in the region to prevent adverse effects on economic well-being, the environment, human health, enjoyment of the natural environment and the relationship between Māori, their culture, their traditions and their ancestral lands, waters, sites, wāhi tapu, and taonga.

**Intermediate outcome:** “exclusion” which means to prevent the establishment of giant hogweed in the Tāmaki Makaurau / Auckland region.

#### Principal measures of achievement:

Service delivery (control)	Enter any property within the specified geographic area of the programme and carry out control work on this species.
Monitoring and surveillance	Undertake inspections, monitoring and surveillance of key risk areas to determine the presence of new infestations and status of existing or historical sites.
Enforcement	Enforce restrictions on the sale, breeding, distribution and exhibition of the pest plant.

Education and advice	Provide information and advice on identification and impacts of the pest plant.
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### 7.7.7 Te murunga o te tupu orotā ā-takiwā whānui / Region-wide eradication pest plants

These eradication pest plants are present in low numbers or have a limited distribution within Tāmaki Makaurau / Auckland. These pests have the potential to establish widely in the region, and are capable of causing adverse effects to the environmental, economic, human health, social or cultural values of the region. Early intervention to eradicate these species to prevent them becoming widespread within the region is likely to be a cost effective management approach.

**Objective:** over the duration of the plan Auckland Council will eradicate the pest plants specified below from the Tāmaki Makaurau / Auckland region to prevent adverse effects on economic well-being, the environment, human health, the enjoyment of natural environments and the relationship between Māori, their culture, their traditions and their ancestral lands, waters, sites, wāhi tapu, and taonga.

**Intermediate outcome:** “eradication” which means to reduce the infestation level of the subject to zero levels in an area in the short to medium term.

#### Principal measures of achievement:

Service delivery (control)	Enter any property within the specified geographic area of the programme and carry out control work on this species.
Monitoring and surveillance	Undertake inspections, monitoring and surveillance of key risk areas to determine the presence of new infestations and status of existing or historical sites.  Undertake inspections, monitoring and surveillance of nurseries, markets and online plant trade.
Enforcement	Enforce restrictions on the sale, propagation, distribution and exhibition of the pest plant.
Education and advice	Provide information and advice on pest plant identification, impacts and control.

**African feather grass (*Cenchrus macrourus* syn. *Pennisetum macrourum*)**

Also known as: veld grass

African feather grass is a perennial clump forming grass which can grow up to 2m tall. Flower heads are long, white to purple, with barbed bristles. It is an aggressive invader, which particularly threatens native species in grassland, scrubland, wetland and sand-dune habitats. Dense clumps may restrict access to natural areas.



***Akebia trifoliata***

Also known as: three leaf Akebia

*Akebia trifoliata* is a climbing semi-deciduous vine with trifoliolate leaves and cup shaped purple flowers. It can be spread deliberately as a traditional medicinal herb. It is shade tolerant and therefore likely to invade native forest by smothering vegetation.



**Asparagus species (*Asparagus drepanophyllus* and *A. umbellatus*)**

Also known as: asparagus fern

*Asparagus drepanophyllus* and *A. umbellatus* are perennial, fleshy herbs. Both species have the potential to be very invasive on cliffs, rocky outcrops, shrubland, woodland and in coastal ecosystems, based on the highly invasive nature of related *Asparagus* species.



Asparagus umbellatus

**Balloon vine and small balloon vine (*Cardiospermum grandiflorum* and *C. halicacabum*)**

Also known as: love in a puff

Balloon vine and small balloon vine are woody perennial vines with coarsely toothed leaves, fragrant clusters of white/yellow flowers and inflated, papery seed pods. The vines aggressively smother native vegetation in wetlands, forest and riparian margins, either at ground level or in canopies up to 10m tall, sometimes eventuating in canopy collapse.



### **Broomsedge (*Andropogon virginicus*)**

Also known as: bluestem, whiskey grass

Broomsedge is a perennial grass with narrow clumps of green stems and leaves up to 1m high, turning purplish to straw coloured as it ages. It is highly competitive in a range of open habitats, including pasture, wetlands and clear-felled forestry areas, often smothering existing vegetation and altering soil composition via the release of biochemicals.



### **Chilean needle grass (*Nassella neesiana*)**

Chilean needle grass is a tufted perennial grass with large drooping purplish flowerheads which grows up to 1m tall. The grass is highly invasive in pasture and has sharp seeds which can penetrate pelts and cause blindness in livestock.



### **Devil's fig (*Solanum torvum*)**

Also known as: Turkey berry

Devil's fig is a perennial shrub with white star shaped flowers and yellow stamens. It can grow up to 4m tall in a range of disturbed ecosystems including plantations, pasture and native forest margins. In pasture, it suppresses forage and can create impassable thickets. In native ecosystems, it can provide habitat, fruit and seeds for pest mammals.



Forest and Kim Starr

### **Great reedmace (*Typha latifolia*)**

Also known as: broadleaf cattail, common cattail, giant reedmace

Great reedmace is a perennial aquatic reed with dark brown sausage-shaped inflorescences borne in early summer. It can quickly invade and monopolise wetlands and other shallow freshwater habitats, suppressing native vegetation and altering flow regimes. It has the potential to directly compete or hybridise with threatened taonga species raupō.



Paul Champion

### Green cestrum (*Cestrum parqui*)

Also known as: green poison berry, ink berry, Chilean cestrum, willow-leaved jessamine

Green cestrum is a deciduous woody shrub, up to 3m tall with clusters of yellow to green tubular flowers and small black berries. It has the potential to outcompete native plants in forest, scrub and riparian habitats and is highly poisonous when consumed.



### Marshwort (*Nymphoides montana*)

Marshwort is a perennial water lily with floating heart shaped leaves and fringed yellow flowers present during summer. It forms thick mats which smother vegetation, impede drainage, interfere with recreational activities on waterways and potentially impact upon the mauri of wai māori.



### Mexican feather grass (*Nassella tenuissima*)

Mexican feather grass is a densely tufted perennial tussock grass up to 70cm tall with feathery flower heads borne in spring. It is unpalatable to livestock and can displace valuable pasture species through selective grazing. It has the potential to out-compete native plants in coastal habitats and affect native fauna by altering the habitat structure.



### Nassella tussock (*Nassella trichotoma*)

Nassella tussock is a perennial tussock grass up to 1m tall with fine, wiry leaves and drooping purplish seed heads. It can be invasive in open habitats, including pasture, coastal areas and rocky scrublands. It is unpalatable to livestock, particularly sheep, and therefore can displace valuable pasture species through selective grazing.



Weedbusters

### *Phragmites karka*

*Phragmites karka* is a perennial reed up to 4m tall with golden brown, feathery seed heads. It can dominate plant communities in fresh and brackish wetlands, estuaries and wet grasslands, often forming dense monocultures and outcompeting threatened plants. It has the potential to interfere with recreational activities on waterways and may impact upon the mauri of wai māori and whanga / harbours.



### *Scrambling lily (Geitonoplesium cymosum)*

Scrambling lily is an evergreen perennial climber which vigorously climbs and strangles host plants up to 12m tall. It bears white to purplish-green flowers with bright yellow anthers in small clusters during spring and summer. It can form dense infestations in native forest, woodlands and potentially stream banks.



### *Water poppy (Hydrocleys nymphoides)*

Water poppy is a perennial aquatic herb with thick glossy floating leaves attached to rubbery creeping stems that form dense mats on a water surface. Flowers are yellow with a purple centre. It can aggressively colonise freshwater habitats; shading out submerged vegetation and restructuring aquatic plant and invertebrate communities.



### *White-edged nightshade (Solanum marginatum)*

White-edged nightshade is a perennial shrub with prickly stems and berry like fruit. Leaves are also prickly and are chalky white on the underside. It has the potential to invade a range of open native habitats including sand dunes, scrub and forest margins. Dense thickets can impact upon production in pasture and forestry plantations and can ultimately decrease land value. All parts of the plant are poisonous and sharp spines can cause minor injuries.



## 7.7.8 Aukati haere noa i te tupu orotā me ngā ture here ā-kaipupuri whenua / Progressive Containment pest plants with land occupier rules

These progressive containment pest plants are present in moderately low numbers or have a limited distribution within the Tāmaki Makaurau / Auckland region, yet have the potential to be highly damaging pests if they were to become widespread. Eradication may not be feasible, nonetheless progressively containing these species is a cost effective approach to prevent their more extensive spread and impact within the region. Land occupiers are required to undertake control of the species in the following section.

### 7.7.8.1 Lantana (*Lantana camara*)

Lantana is an aromatic, prickly shrub growing up to 3m tall with small pink to yellow flowers borne in inflorescences and clusters of blue-black fruit. It readily invades pasture, reducing productivity, and is toxic to livestock. It also has the potential to alter vegetation structure in coastal scrubland, dunes and other open or low-stature plant communities.



**Objective:** over the duration of the plan Auckland Council will progressively contain lantana (*Lantana camara*) to reduce adverse effects on economic well-being, the environment, human health, enjoyment of the natural environment and the relationship between Māori, their culture, their traditions and their ancestral lands, waters, sites, wāhi tapu, and taonga.

**Intermediate outcome:** “progressive containment” which means to contain or reduce the geographic distribution of lantana to an area over time.

#### **Rules:**

7.7.8.1.1 All occupiers of land in rural Auckland must destroy all lantana on that land.

The purpose of rule 7.7.8.1.1 is to require the occupier of a place to take specified actions to eradicate or manage the pest or a specified pest agent on the place.

A breach of this rule is an offence under s154N(19) of the Biosecurity Act.

### Principal measures of achievement:

Monitoring and surveillance	Undertake inspections, monitoring and surveillance of nurseries, markets and online plant trade.
Enforcement	Enforce occupier responsibility to control the pest plant pursuant to the rules in this section, upon complaint by immediately affected neighbours. Enforce restrictions on the sale, propagation, distribution and exhibition of the pest plant.
Education and advice	Provide information and advice on pest plant identification, impacts and control.
Requirement to act	Land occupiers to destroy plants when instructed.



### 7.7.8.2 Wild kiwifruit (*Actinidia* spp. (wild varieties only))

Also known as: Chinese gooseberry

Wild kiwifruit is a vigorous perennial vine with large leaves and densely hairy edible fruit. It can rapidly form dense blankets of tangled stems which smother and overtop vegetation in native and plantation forest, gullies, shelterbelts and scrubland. It is host of *Pseudomonas syringae* pv. *Actinidiae* (PSA), a serious pathogen of commercial kiwifruit which imposes significant costs on the kiwifruit industry.



**Objective:** over the duration of the plan Auckland Council will progressively contain wild kiwifruit (*Actinidia* spp.) to reduce adverse effects on economic well-being, the environment, the enjoyment of the natural environment and the relationship between Māori, their culture, their traditions and their ancestral lands, waters, sites, wāhi tapu, and taonga.

**Intermediate outcome:** “progressive containment” which means to contain or reduce the geographic distribution of wild kiwifruit to an area over time.

#### **Rules:**

7.7.8.2.1 All occupiers of land in the Auckland region that includes abandoned or former kiwifruit orchards must control all wild kiwifruit on that land.

7.7.8.2.2 No person shall dispose of kiwifruit in such a manner as to promote the establishment of wild kiwifruit populations.

The purpose of rule 7.7.8.2.1 is to require the occupier of a place to take specified actions to eradicate or manage the pest or a specified pest agent on the place.

The purpose of rule 7.7.8.2.2 is to regulate the use or disposal of organic material.

A breach of these rules is an offence under s154N(19) of the Biosecurity Act.

### Principal measures of achievement:

Service delivery (control)	Enter any property within the specified geographic area of the programme and carry out control work on this species, with priority given to sites in proximity of biodiversity focus areas.
Monitoring and surveillance	Undertake inspections, monitoring and surveillance of key risk areas to determine the presence of new infestations and status of existing or historical sites.
Enforcement	Enforce occupier responsibility to control the pest plant pursuant to the rules in this section.
Education and advice	Provide information and advice relating to the problems caused by wild kiwifruit. Provide information on alternative means of fruit disposal and methods of controlling infestations. Provide information and advice on the National Psa-V Pest Management Plan.
Requirement to act	Land occupiers to destroy plants when instructed.

### 7.7.9 Aukati haere noa i te tupu orotā ki ngā hōtaka ārai e horahia ana e te Kaunihera o Tāmaki Makaurau / Progressive Containment Pest Plants with Auckland Council delivered control programmes

These progressive containment pest plants are present in low numbers or have a limited distribution within the Tāmaki Makaurau / Auckland region, yet have the potential to be highly damaging pests if they were to become widespread. Eradication may not be feasible. Nonetheless, progressively containing these species is a cost effective approach to prevent their more extensive spread and impact within the region. Auckland Council will undertake management of the species in the following section at all sites where they are known to occur in the region.

**Objective:** over the duration of the plan Auckland Council will progressively contain the pest plants specified below to reduce adverse effects on economic well-being, the environment, enjoyment of the natural environment and the relationship between Māori, their culture, their traditions and their ancestral lands, waters, sites, wāhi tapu, and taonga.

**Intermediate outcome:** “progressive containment” which means to contain or reduce the geographic distribution of the pest plant, to an area over time.

#### Principal measures of achievement:

Service delivery (control)	Enter any property within the specified geographic area of the programme and carry out control work on this species.
Monitoring and surveillance	Undertake inspections, monitoring and surveillance of key risk areas to determine the presence of new infestations and status of existing or historical sites.  Undertake inspections, monitoring and surveillance of nurseries, markets and online plant trade.
Enforcement	Enforce restrictions on the sale, propagation, distribution and exhibition of the pest plant.
Education and advice	Provide information and advice on pest plant identification, impacts and control.

**Asiatic knotweed (*Fallopia japonica*, *F. multiflora* and *F. sachalinensis*)**

Also known as: Japanese knotweed, he shou wu, fo-ti

Asiatic knotweed is a perennial herb with branched reddish stems and drooping racemes of white flowers, which is often used as a traditional medicine. It can form dense, long-lived thickets which exclude other species and prevent native seedling recruitment in riparian and forest margins.



Weedbusters

**Cathedral bells (*Cobaea scandens*)**

Cathedral bells is a vigorous perennial climber with large, round bell shaped flowers which are green and fragrant when young in early summer and turn deep purple late summer to autumn. It can smother all plants up to medium height canopy and prevent the recruitment of native seedlings in scrub, forest, riparian and coastal ecosystems.



**Climbing spindle berry (*Celastrus orbiculatus*)**

Climbing spindle berry is a deciduous climber with spined stem, serrated leaves, yellow to orange berries and clusters of small pale green flowers in spring. It is capable of achieving 90% cover in forest ecosystems, smothering plants beneath, leading to canopy collapse and suppressing native seedling recruitment. Densely layered thickets have the potential to overtop plantation trees and impede recreational access to natural areas.



**Houttuynia (*Houttuynia cordata*)**

Also known as: chameleon plant, yu xing cao

Houttuynia is a deciduous ground cover herb with creeping stems up to 1m tall, heart shaped leaves and small white flowers borne in summer. Based on its life form and rapid ability to overtake gardens, it has the potential to impact forest and wetland ecosystems by suppressing native seedling recruitment and altering canopy composition.



### Needle grass (*Austrostipa rudis*)

Needle grass is an erect, wiry perennial tussock grass up to 1.3m tall with large drooping purplish seed heads. It is able to crowd out native coastal plants and desirable pasture species and will also invade native grasslands, bush margins and open woodland.



### Noogoora bur (*Xanthium strumarium* syn. *occidentale*)

Also known as: common cockle bur

Noogoora bur is an erect, annual herb with blotchy purple stems and small yellow flowers. It is poisonous to livestock and produces hooked burs which cause sores in livestock mouths and hooves. It is a nuisance pest of pasture and crops, especially maize.



Trevor James, Agresearch

### Old man's beard (*Clematis vitalba*)

Old man's beard is a deciduous climber reaching up to 20m with creamy white flowers from December to May followed by grey, hairy seeds with distinctive white plumes borne in clusters. It attaches to its host with tendrils and invades forests and riparian margins by smothering canopy, often resulting in canopy collapse.



### Sagittaria species (*Sagittaria* spp. (excl. *S. teres*))

Also known as: arrowhead

*Sagittaria* species are a group of emergent perennial aquatic herbs ranging from 1-2m tall. Many of the species produce inflorescences of pale-coloured flowers in summer. It is capable of forming dense infestations which can trap sediment resulting in channel infilling, blocked drainage ditches, impeded recreational activities, displaced native aquatic vegetation and potentially impacting upon mauri of wai māori.



NIWA

### Senegal tea (*Gymnocoronis spilanthoides*)

Senegal tea is an emergent aquatic perennial herb up to 1.5m tall bearing white clover like flowers between December and May. It often forms floating mats that block streams and drainage tunnels, altering water flow dynamics and exacerbating flooding. It has the potential to replace many short-stature herbaceous wetland plant communities and may impact upon the mauri of wai māori.



### Spartina (*Spartina alterniflora*, *S. anglica* and *S. x townsendii*)

Spartina is an erect perennial grass growing up to 1m tall with fleshy rhizomes enabling plants to spread to form dense clumps or swards. It can reduce large estuaries and shallow harbours to thin drains surrounded by rough pastures and will trap sediment, raising levels above the high tide mark. It destroys intertidal zonation and habitat, and smothers tauranga mātaimai shellfish beds thereby preventing kaimoana harvesting. Adventive grasses often succeed spartina, creating dry meadows, and leading to immense biodiversity loss.



Spartina progressive containment programme applies only to the area defined in Map 12.

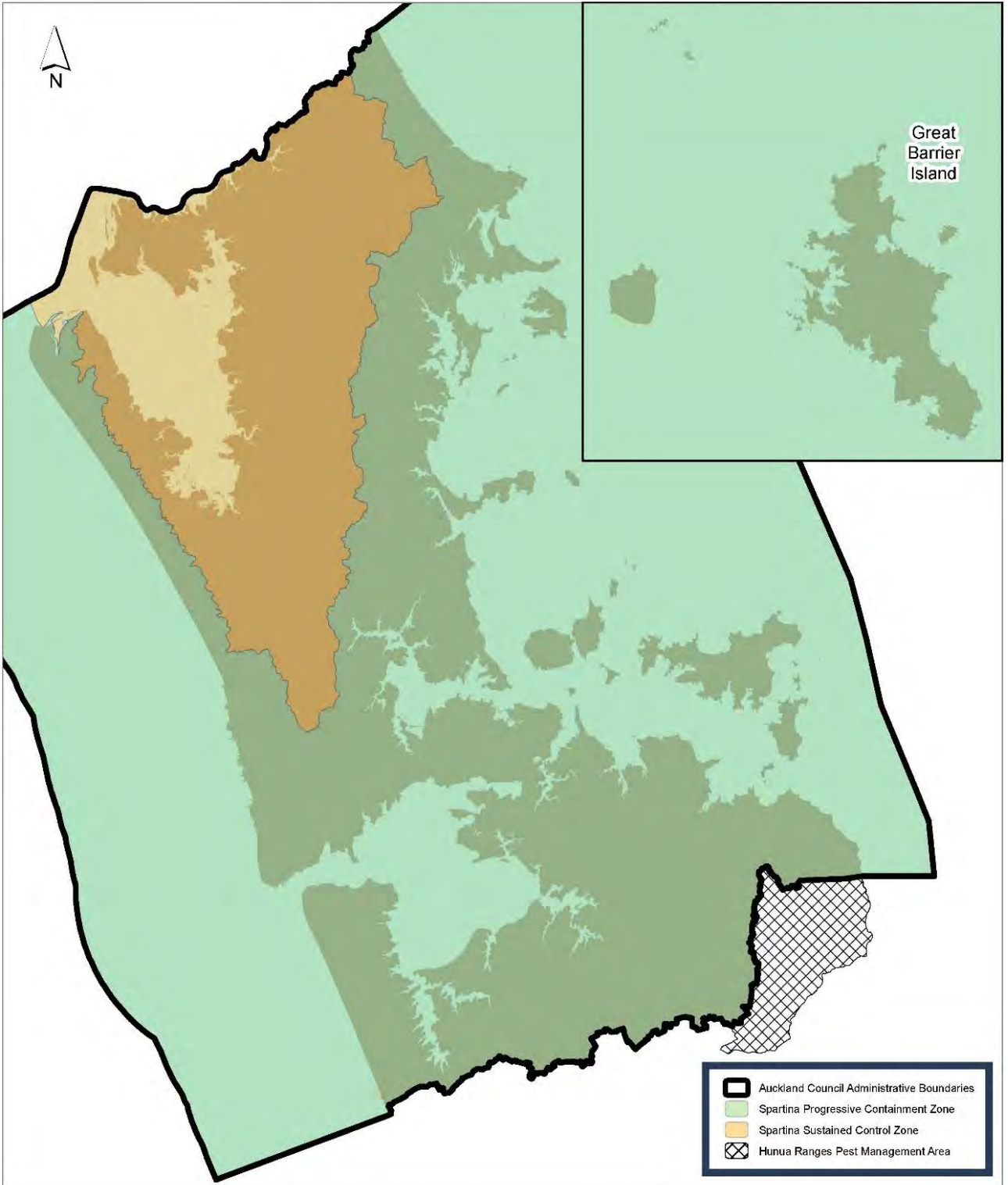
See also Sustained Control programme for Kaipara harbour (section 7.7.10).

### Wild broom (*Cytisus scoparius* (excl. cultivated varieties))

Wild broom is a dense perennial shrub up to 2m tall with small, hairy leaves, pea-like yellow flowers and dark flattened seedpods produced in spring-summer. It invades pasture and forestry plantations, forming thick stands and greatly reducing productivity. It also competes with native plants in shrubland, grasslands, montane, open forest and riparian habitats, and can alter soil chemistry via nitrogen fixing.



Wild broom Council service delivery applies only to rural Auckland.



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# Regional Pest Management Plan

## Spartina Control Zones

0 2.5 5 7.5  
Kilometers  
Scale @ A4  
= 1:600,000  
Date Printed:  
1/16/2020



Map 12. Areas where spartina management programmes apply.

### 7.7.10 Te mau tonu o te patu tupu orotā / Sustained Control pest plants

The species in the following Sustained Control programmes vary greatly in their distribution across the region; some are not currently known to be established in the region, while others are already widespread pest plants. Nonetheless, all these species have the potential for economic and/or environmental impacts, and for all of these species there is value in reducing the risk of humans assisting the establishment or further spread of pest populations. The following programmes therefore manage these pest plants through rules and accompanying education and awareness programmes designed to reduce risk of pests being spread through gardening and other activities, and also to encourage land occupiers to undertake pest management on their own properties.

**Objective:** over the duration of the plan Auckland Council will sustainably control the pest plants specified below to prevent adverse effects on economic well-being, the environment, enjoyment of the natural environment and the relationship between Māori, their culture, their traditions and their ancestral lands, waters, sites, wāhi tapu, and taonga.

**Intermediate outcome:** “sustained control” which means to provide for ongoing control of the pest plants specified below, to reduce their impacts and spread to other properties.

#### Rules:

- 7.7.10.1.1 No person shall cause to breed any Sustained Control Pest Plant within the Auckland region.
- 7.7.10.1.2 No person shall distribute or release (or cause to be released or distributed), any Sustained Control Pest Plant within the Auckland region.
- 7.7.10.1.3 No person shall sell or offer for sale any Sustained Control Pest Plant within the Auckland region.
- 7.7.10.1.4 No person may plant or allow to be planted any Sustained Control Pest Plant (specified below) on or in any land within the Auckland region.
- 7.7.10.1.5 Despite rule 7.7.10.1.4, a person may transfer or allow to be transferred an existing Sustained Control Pest Plant planted on their land from one location to another location within the boundaries of the same property. This exception does not apply to the following freshwater pest plants: alligator weed, bladderwort, Chilean rhubarb, eel grass, egeria, hornwort, giant reed, lagarosiphon, parrot's feather, reed sweet grass, water primrose.



7.7.10.1.6 All occupiers of land in the Auckland region must destroy any Sustained Control Pest Plant that has been planted on their land in breach of the RPMP, if directed to do so by an authorised person.

The purpose of rules 7.7.10.1.1, 7.7.10.1.2, 7.7.10.1.3, 7.7.10.1.4 and 7.7.10.1.5 is to specify the circumstances in which the pest may be communicated, released, or otherwise spread.

The purpose of rule 7.7.10.1.6 is to require the occupier of a place to take specified actions to eradicate or manage the pest or a specified pest agent on the place.

A breach of these rules is an offence under s154N(19) of the Biosecurity Act.

Rules 7.7.10.1.1 to 7.7.10.1.6 come into force on 1 April 2020 for the following species: bamboo species, berry heath, black wattle, Brazilian rattlebox, Californian thistle, *Carex scoparia*, century plant, Chinese holly grape, dally pine, divided sedge, giant rhubarb, guava, hakea, holly-leaved senecio, *Hydrocotyle umbellata*, loquat, marram grass, Mexican devil, prickly-leaved wattle, red dragon, red valerian, salt water paspalum, *Selaginella* spp., sharp rush, Spanish broom, Sydney golden wattle, tree lupin.

Rules 7.7.10.1.1 to 7.7.10.1.6 come into force on 1 April 2021 for the following species: alder, bangalow palm, Canary Island ivy, Chinese fan palm, creeping fig, fatsia, furcraea, Japanese cherry, Morton Bay fig, Queensland umbrella tree, soap aloe, yellow guava.

#### Principal measures of achievement:

Service delivery	Facilitate the development and release of biocontrol for targeted species, which may include (but not limited to) African club moss, alligator weed, blue morning glory, boneseed, boxthorn, Californian thistle, climbing asparagus, giant reed, gorse, grey willow, hornwort, Japanese honeysuckle, jasmine, moth plant, Mexican daisy, pampas grass, privet (tree and Chinese), ragwort, rhamnus, royal fern, salt water paspalum, tradescantia, tutsan, wild ginger and woolly nightshade.
Monitoring and surveillance	Undertake inspections, monitoring and surveillance of nurseries, markets and online plant trade. Undertake monitoring and surveillance of biocontrol agent dispersal and impacts. Undertake surveillance to understand emerging trends in pest plant naturalisations and impacts.
Enforcement	Enforce restrictions on the sale, propagation, distribution and exhibition of the pest plant.

<p>Education and advice</p>	<p>Provide information and advice on pest plant identification, impacts and control.</p> <p>Provide information and advice on responsible gardening practices including safe disposal of organic refuse, and alternative planting choices.</p> <p>Support nursery industry initiatives, including breeding of low fertility forms, aimed at reducing biosecurity risk of nursery stock.</p> <p>Provide advice and support to community groups undertaking pest plant control, with priority given firstly to activity in or around biodiversity focus areas and secondly to work in or around SEAs. Facilitate community biocontrol activity for moth plant, tradescantia and other ecologically damaging pest plants of high priority to the community. Facilitate coordination within the region and inter-regionally to improve pest management outcomes through aligned action, including data sharing.</p>
<p>Research and development</p>	<p>Facilitate research on pest plant impacts and management tools, including but not limited to biocontrol and emerging technology such as drones that may improve ability to deliver effective pest plant control in remote or difficult to access areas.</p>
<p>Requirement to act</p>	<p>Land occupiers to destroy plants when instructed.</p>

**African club moss (*Selaginella kraussiana*)**

African club moss is a mat-forming fern ally with irregular branched stems, small leaves (2-4mm) arranged in rows and rounded cones. It grows rapidly and forms dense mats that can cover forest floors thereby excluding native ground cover plant species, preventing the establishment of seedlings and altering habitat structure for native invertebrates. Suppression of native understorey by African club moss may increase light levels in forests, enabling other pest plant species to establish.



### African pig's ear (*Cotyledon orbiculata*)

Also known as: pig's ear, round-leafed navel-wort, elk horn

African pig's ear is a succulent up to 1m tall with grey-green leaves and bell-shaped orange, red or pink flowers borne on stems up to 50cm high. It is capable of forming dense clumps in coastal ecosystems and displaces native coastal vegetation.



### Agapanthus<sup>1</sup>

Agapanthus is a perennial evergreen herb with leathery leaves and erect stems that terminate in many white, blue or purple flowered umbels. Plant height ranges from 100-500mm for dwarf forms and up to 1.2m for tall forms. It forms almost monocultural infestations which exclude native vegetation, especially in coastal areas including cliffs and rocky outcrops. It ranks in the top ten plants resulting in calls to the National Poisons Centre. Rhizomes and other plant parts are toxic if ingested, resulting in vomiting and diarrhoea. Contact allergens are capable of causing rashes, burning sensations and mouth ulcerations, especially in children.



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<sup>1</sup> For the purpose of this plan, agapanthus means:

- a) Prior to 1 April 2022, all *Agapanthus praecox* tall form cultivars (those exceeding 600mm height); and
- b) From 1 April 2022, all *Agapanthus praecox* cultivars, except for any low fertility cultivar which is determined by Auckland Council to produce less than 2% viable seeds compared to high fertility cultivars that were evaluated under the same conditions and location. Cultivars already meeting this test will be listed on the Auckland Botanic Gardens website <http://www.aucklandbotanicgardens.co.nz/>

### **Alder (*Alnus glutinosa*)**

Also known as: common alder

Alder is a deciduous tree up to 15m tall with fissured bark, toothed leaves and distinctive catkins late winter to spring. It dominates and simplifies riparian and wetland ecosystems, restructuring plant communities from low-stature to tree-dominated habitats. It has the ability to fix nitrogen thereby altering nutrient cycling regimes in invaded habitats. Pulses of rapidly decomposing litter into waterways can reduce dissolved oxygen levels, increase nitrogen levels and alter stream invertebrate communities. Dense stands may restrict access to waterways and contact with pollen may cause allergies.

Note: Rules in this section come into force for alder on 1 April 2021.



### **Alligator weed (*Alternanthera philoxeroides*)**

Alligator weed is a perennial emergent aquatic bottom-rooted herb forming extensive floating mats on water's surface but can also grow terrestrially, preferring damp ground. The dense mats can alter aquatic habitat structure (e.g. water flow, light penetration), alter invertebrate community composition and reduce native plant cover and diversity in wetlands and margins of water bodies.

It will also displace valuable pasture species and block drainage channels, exacerbating flooding on farmland.



### **Aristea (*Aristea ecklonii*)**

Aristea is an evergreen perennial, with woody rhizomes, leaves up to 40cm long and numerous blue flowers in 5 to 7-flowered clusters. It is prevalent on roadsides but forest, scrubland, coastlines, herbfields, rocky and bare lands are also suitable habitats. It forms dense, long-lived stands in open sites and moderate shade, preventing seedlings of native species from establishing. In forest ecosystems, it may open canopy, leading to succession by introduced shrubs, vines and grasses.



### **Artillery plant (*Lamium galeobdolon*)**

Also known as: aluminium plant

Artillery plant is a perennial herb with pointed, coarsely toothed leaves which are mostly green but feature distinctive large silver-grey patches on the upper surface. It forms large, dense, single-species clumps or mats, smothering native vegetation and preventing its regeneration in disturbed bush, scrubland, fernland and forest margins.



### **Arum lily (*Zantedeschia aethiopica*)**

Also known as: calla lily

Arum lily is a clump-forming perennial herb to 1.5m tall bearing white flowers with yellow spikes from late winter to late summer and dark leathery arrowhead-shaped leaves. It is capable of forming dense mono-cultures that exclude other plant species in wetlands, riparian margins and damp forest gullies. It displaces valuable pasture species, especially in damp sites and is toxic to livestock.



### Australian sedge (*Carex longebrachiata*)

Also known as: drooping sedge

Australian sedge is a perennial deep-rooted tussock up to 90cm tall with long drooping leaves and very small flowers, borne on drooping inflorescences up to 90cm long. It is predominantly a pest of poor or overgrazed pasture, forming dense swards which are unpalatable to livestock, reducing productivity where present. It may also suppress the growth of native grasses or other short stature plants in grassland or scrub ecosystems.



### Baccharis (*Baccharis halimifolia*)

Also known as: cotton-seed tree; groundsel bush; groundsel tree

Baccharis is an evergreen glabrous, multi-branched shrub up to 4m tall with toothed oblong leaves, cotton-like seed heads and small cream flowers borne February to May. Baccharis is primarily a threat to pastoral grazing; reducing the movement of livestock and pasture productivity. It has further potential to suppress native species in rocky outcrops, wetlands and other habitats.



**Bamboo (*Phyllostachys aurea*, *Phyllostachys nigra*, *Pleioblastus auricomus*, *Pleioblastus hindsii*, *Pseudosasa japonica*, *Chimonobambusa quadrangularis*)**

This group of perennial running-type bamboo species can form dense thickets up to 6-7m tall, with vigorous spreading rhizomes. Impacts are likely to be localised, with neighbouring properties, urban bush fragments, riparian areas and wetlands most at risk from urban plantings or dumping of garden waste. They are able to form dense mono-specific stands which exclude other plant species, likely leading to reductions in plant diversity, simplified stand structure and altered faunal assemblages. These impenetrable stands have the potential to impede access to natural areas.

Note: Rules 7.7.10.1.1 to 7.7.10.1.6 come into force on 1 April 2020 for bamboo species.



**Banana passionfruit (*Passiflora tripartita* var. *mollissima*, *P. mixta* and *P. tarminiana*)**

Also known as: wild blue-crown, wild passion vine

Banana passionfruit is a perennial high climbing vine (8-10m) with three-lobed leaves, pink flowers and green ripening to orange-yellow fruit containing edible pulp with small black seeds. It is fast growing, potentially smothering native vegetation and preventing the establishment of new seedlings. It may also facilitate exotic birds and mammals, particularly feral pigs, through provision of food resource. It is a host of *Passiflora* latent virus (PLV), to which economically important species *P. edulis* and *P. ligularis* are susceptible, and therefore poses a risk to the horticultural industry.





### Bangalow palm (*Archontophoenix cunninghamiana*)

Bangalow palm is a tall palm, with an undivided trunk, pinnate leaves, hanging inflorescences, globose scarlet fruit, growing up to 14m in Tāmaki Makaurau / Auckland (25m in native range). It seeds prolifically and can be very long-lived; some New Zealand specimens known to have been planted prior to 1840s. It is highly invasive in South America, dominating forests and out-competing native South American palms. In Aotearoa / New Zealand it has the potential to displace native species, especially culturally significant nikau palms which occupy similar niches but have been shown to be poorer competitors under controlled conditions. Because it is shade tolerant and bird dispersed, it has potential to invade intact native forest, especially through seedling bank exploitation of light gaps.

Note: Rules in this section come into force for bangalow palm on 1 April 2021.



### Barberry (*Berberis glaucocarpa*)

Barberry is an evergreen or semi-deciduous spiny shrub up to 4-7m tall with toothed leathery leaves, yellow flowers borne in clusters from October to November and reddish black berries. Barberry replaces desirable pasture species, reducing grazing area and impeding livestock movement. Can displace native species in open habitats including scrubland, coastal areas and disturbed forest.



### Bartlettina (*Bartlettina sordida*)

Bartlettina is an erect evergreen perennial shrub (1-2m tall) with densely hairy, large leaves and fluffy clusters of pink-purple flowers produced from November to January. It occurs mainly in disturbed areas and scrub margins, and is shade tolerant, fast growing and capable of forming dense stands that could potentially exclude native plants.



### **Bathurst bur (*Xanthium spinosum*)**

Bathurst bur is an erect, spiny summer annual plant up to 1m tall with inconspicuous flowers and fruit (burs) bearing hooked spines. It is predominantly a pest of production ecosystems. Burs adhere to sheep wool, contaminating and reducing the value of the yield. Spines prevent stock from grazing and can damage stock feet or hinder stock movement. It can displace desirable pasture plants and is weedy in maize and other summer crops, potentially reducing crop yield.



#### **Rules:**

- 7.7.10.1.7 All occupiers of any land that is located within rural Auckland must destroy all Bathurst bur plants on that land.

The purpose of rule 7.7.10.1.7 is to require the occupier of a place to take specified actions to eradicate or manage the pest or a specified pest agent on the place.

A breach of this rule is an offence under s154N(19) of the Biosecurity Act.

### **Berry heath (*Erica baccans*)**

Berry heath is a shrub up to 2m tall with pink/red, small flowers, borne in bunches from August to December. Impacts are likely to be restricted to a relatively narrow range of terrestrial ecosystems including gumlands, coastal cliffs and mānuka shrublands, but within these may have moderate impact. It competes with native early successional species such as mānuka and is advantaged by fire; therefore it is likely to increase in dominance at frequently disturbed sites.



Mike Wilcox

Note: Rules 7.7.10.1.1 to 7.7.10.1.6 come into force on 1 April 2020 for berry heath.

**Blackberry (wild aggregates) (*Rubus fruticosus* agg.)**

Also known as: bramble, cut leaf blackberry

Wild blackberry is a prickly perennial scrambling, woody shrub up to 2m tall with thorned stems, white to pink flowers and red fruit eventually ripening to black. It invades pasture, reducing pasture production and stock-carrying capacity, and injuring stock. It can dominate forestry plantations, impeding access for manual operations and reducing overall yield. In natural ecosystems, it displaces closely related native species and smothers low growing native vegetation in a range of habitat types. It is also a host for blackberry rust *Phragmidium violaceum*, which has been found infecting endemic tātarāmoa / bush lawyer *R. cissoides*.



**Black wattle (*Acacia mearnsii*)**

Black wattle is a tree best distinguished by its dark green leaves, subdivided into leaflets, and cream flower heads borne in racemes from July-September. It is capable of forming dense stands, competing with other plant species in scrubland, coastal areas and riparian margins. As a nitrogen fixer with rapid decomposition rates, it can modify soil chemistry, moisture content and microbial function in invaded habitats, indirectly impacting vegetation and invertebrate communities.



Forest and Bird

Note: Rules 7.7.10.1.1 to 7.7.10.1.6 come into force on 1 April 2020 for black wattle.

**Bladderwort (*Utricularia arenaria*, *U. gibba*, *U. livida* and *U. sandersonii*)**

Bladderwort is a group of carnivorous perennial aquatic herbs with small globose traps that suck invertebrate prey inwards when triggered by external hairs. They form dense sprawling mats which float at or just below the water's surface with the aid of tiny round bladders. Bladderworts spread aggressively and are potentially a serious threat to small turf-forming species and native *Utricularia* species in freshwater ecosystems. Impacts to submerged vegetation are possible due to shading; this may result in reduced oxygen levels within sediment, and consequent changes in sediment chemistry.



**Blue morning glory (*Ipomoea indica*)**

Blue morning glory is a high-climbing, perennial plant with twining stems, three lobed hairy leaves and blue to purple tubular flowers borne in clusters from January to December. It can completely smother and suppress other plant species on the ground or in the canopy, in forest and scrub margins, around gardens and plantations.



**Blue passion flower (*Passiflora caerulea*)**

Blue passion flower is a perennial high climbing vine with spiralling tendrils, blue-purple and white flowers borne during summer-autumn and fruit which ripens from green to yellow. It is fast growing, potentially smothering native vegetation and preventing the establishment of new seedlings in forest, riparian and coastal ecosystems. It may also facilitate exotic birds and mammals through the provision of food resources.



**Blue spur flower (*Plectranthus ecklonii* and *P. grandis*)**

Blue spur flower is a group of soft-wooded shrubs up to 2m tall with irregularly serrated leaves and erect flower heads made up of small tubular violet flowers produced from December to May. It has the potential to outcompete native plants due to clonal spread and the ability to form dense smothering clumps. Bush margins and disturbed forest may be most at risk from invasion.



**Bolivian fuchsia (*Fuchsia boliviana*)**

Bolivian fuchsia is an evergreen shrub up to 3m tall with densely hairy leaves and pink/red flowers, borne in drooping racemes. It is fast growing, and will potentially out-compete native *Fuchsia* spp. and other native plants in forest, shrub and riparian ecosystems. Hybridisation between *Fuchsia* spp. populations is well documented and may result in the loss of genetic diversity where Bolivian fuchsia co-occurs with populations of native kōhutuhutu *Fuchsia* spp.



**Bomarea (*Bomarea caldasii* and *B. multiflora*)**

Also known as: climbing alstroemeria, Bomaria

Bomarea is a perennial vine with thin, elongated leaves, red, orange or gold tubular flowers hanging in clusters from summer to winter and bright orange fruit from May to August. It is known to outcompete, strangle and smother native forest and riparian species, shading out seedlings and altering successional recruitment. Interactions with the plant are likely to cause dermatitis or allergic reactions.



Weedbusters

### **Boneseed (*Chrysanthemoides monilifera*)**

Boneseed is an evergreen shrub or small tree up to 3m in height with leathery irregularly serrated leaves, bright yellow flowers produced from September to February and hard oval green fruit which ripen to black. It is likely to crowd out native plants in open coastal areas or disturbed habitats, including freshly cleared forestry plantations. It may also alter plant community composition through allelopathy and competition, alter patterns of nutrient cycling, and facilitate other weeds. The plant is highly flammable and therefore a fire risk in invaded ecosystems.



### **Boxthorn (*Lycium ferocissimum*)**

Boxthorn is a densely branched and spiny evergreen shrub up to 6m tall with creamy purple flowers and fleshy red fruit. It is a pest plant in coastal habitats; inhibiting the regeneration of native plants, invading coastal pastures, ensnaring seabirds and impeding access to nesting sites. Spines can become imbedded in bone or soft tissue, resulting in infection and pseudo-tumours.



### **Brazilian pepper tree (*Schinus terebinthifolius*)**

Also known as: Christmas berry

Brazilian pepper tree is a large shrub or small tree up to 3m tall with pinnate leaves, small, white flowers borne in late summer/autumn and red fleshy fruit. It is fast growing, displacing native vegetation in a range of ecosystems including mānawa/mangroves, salt marshes, grasslands and other terrestrial habitats. It is also capable of chemically inhibiting the growth and abundance of co-occurring native plants via the release of biochemicals into the soil.



### Brazilian rattlebox (*Sesbania punicea*)

Brazilian rattlebox is a deciduous shrub or small tree with red-orange flowers in showy inflorescences late spring-autumn and long winged seed pods. It will form dense almost monospecific stands, competitively excluding native plant species in perennial wetlands and watercourses, pasture, forest and scrub ecosystems. Dense growth in watercourses impedes water flow, exacerbates flooding, bank destabilisation and erosion, and can impede human access to watercourses. As a nitrogen fixing plant, it also has the potential to alter nutrient cycling regimes in invaded habitats.

Note: Rules 7.7.10.1.1 to 7.7.10.1.6 come into force on 1 April 2020 for Brazilian rattlebox.



Eric Hunt

### Brush wattle (*Paraserianthes lophantha*)

Brush wattle is a small tree or shrub with frond like leaves and green-yellow flowers, grouped in cylindrical inflorescences borne May-August, followed by flat seed pods up to 15cm long. It is a pest plant in open disturbed sites including riverbanks, sand dunes and other coastal habitats, out-competing native plants and potentially facilitating other exotic pest plants via nitrogen fixation.



### Buddleia (*Buddleja davidii*)

Also known as: buddleja, butterfly bush

Buddleia is a semi-deciduous shrub up to 3m tall with small purple/pink/white flowers borne in conical clusters between December and April. It is a strong competitor capable of displacing co-occurring species in early-rotation plantation forests and a variety of disturbed habitats, forming dense thickets and altering vegetation composition trajectories.



### **Bur daisy (*Calotis lappulacea*)**

Bur daisy is a small, many-branched perennial herb with small yellow, spherical flowers year-round that dry into tough brown spheres with hooks. It displaces desirable pasture plants, especially on poor pasture, and is a serious contaminant of wool. Similar native plants in dry rocky outcrops or open disturbed ecosystems may be at risk from competition.



Trevor James, Agresearch

### **Burdock (*Arctium minus*)**

Burdock is a bushy thistle-like forb up to 1.5m tall with flowers borne between January and April as spiky green spheres with pink, purple or lavender centres, and bracts becoming hooked when dry. It infests pasture; tainting milk if foraged in large quantities, contaminating sheep wool with burs and injuring livestock. It is also a reservoir for a range of fungal diseases that may impact plants in the horticulture industry. Interaction with the plant may cause contact dermatitis and toxic seed hairs may be irritating to pets and humans.



### **Bushy asparagus (*Asparagus aethiopicus* syn. *A. densiflorus*)**

Bushy asparagus is a scrambling perennial herb with a thick mat of tuberous roots, white flowers borne between October and March and red berries. Stems are hairy and bear 10mm long spines. Dense infestations are capable of excluding native vegetation particularly in coastal and forest ecosystems, and may impede recreational access to natural areas. Other impacts may be similar to climbing asparagus.





### Buttercup bush (*Senna septemtrionalis*)

Buttercup bush is a shrub up to 2m tall with yellow flowers borne December to June and seed pods up to 10cm long. Copious seed production, rapid growth and persistent seed bank allow buttercup bush to persistently dominate open, disturbed sites such as riparian margins, forest edges and scrub, excluding co-occurring native vegetation.



### Californian bulrush (*Schoenoplectus californicus*)

Californian bulrush is a dense clumping rush, up to 4m tall with triangular stems, drooping inflorescence of small brown flowers borne November-April followed by small cream-grey nuts. It forms tall dense stands in brackish river margins and estuaries, excluding co-occurring native sedge species. There is further potential to alter soil conditions in invaded habitats by stabilising sand bars and river margins.



### Californian thistle (*Cirsium arvense*)

Californian thistle is a perennial herb with long spiny leaves, red/pink/purple flowers borne on shoots between December-February and fluffy white tufts of hairs (female flowers). It is a major primary production pest; infesting pasture and subsequently reducing milk and animal yields due to herbivore avoidance. Spines injure farm animals' mouths, promoting 'scabby mouth disease' and seed heads contaminate wool. Pasture management to mitigate impacts can involve considerable costs to farmers, including cost of herbicide use and additional fertiliser use.

Note: Rules 7.7.10.1.1 to 7.7.10.1.6 come into force on 1 April 2020 for Californian thistle.



**Canary Island ivy (*Hedera helix* subsp. *canariensis*)**

Canary Island ivy is an evergreen perennial root-climbing plant with three-lobed irregularly patterned leaves, yellow-green flowers borne in umbels in August-December and deep purple-black berries. Impacts are likely to be similar to closely related subspecies English ivy. It forms dense groundcover mats, thereby preventing the regeneration of native species, impacting ground-active invertebrate communities and providing favoured habitat for rodents in native bush. Contact with the plant can cause red, itchy, burning contact dermatitis.



Bernd Sauerwein

**Cape honey flower (*Melianthus major*)**

Cape honey flower is an evergreen shrub (up to 2m) with frond-like leaves, foul smelling, red-brown flowers produced between July and April and papery seed capsules. It is capable of forming dense stands which can shade out native plants, particularly in dune systems and disturbed ecosystems. It is highly poisonous; deaths from consumption recorded in both humans and livestock.



**Cape ivy (*Senecio angulatus*)**

Cape ivy is a perennial scrambling herb up to c.2m tall with toothed, arrow-shaped teeth and yellow flowers borne March-August. Open coastal ecosystems and regenerating forest may be most at risk from invasion, with native species being out-competed or smothered by scrambling thickets. Thickets may locally obstruct access to recreational areas.



### Cape sundew (*Drosera capensis*)

Cape sundew is a carnivorous perennial low growing herb with bright green, linear leaves bearing coloured (usually red) tentacle-like hairs tipped with a sticky sap that attracts and captures small insects. It displaces small native plants in wetland ecosystems, including native sundews and may capture native insects, thereby altering local invertebrate communities.



### Carex (*Carex divulsa*)

Also known as: meadow sedge, grey sedge, divided sedge

Carex is a long-lived perennial tussock-forming sedge with long flower spikes made up of interrupted small brown or green flowers. It displaces pasture species, invades apple orchards and is a potential reservoir for rust fungi which could impact horticultural plants. In natural ecosystems, it can colonise forest margins and grasslands and will compete with native grass species such as patiti.



### Carex scoparia

*Carex scoparia* is a dense, green grass-like perennial sedge up to 90cm tall. Inflorescences have brown/green oblong spikes and are borne late spring to early summer. It invades wetlands and lake margins potentially out-competing native wetland plants, and altering habitat for native fauna (e.g. impeded fish access to spawning sites). Closely related species are invasive, capable of forming almost monocultural swards, excluding native plant species and dramatically reducing plant diversity.

Note: Rules 7.7.10.1.1 to 7.7.10.1.6 come into force on 1 April 2020 for *Carex scoparia*.



### Castor oil plant (*Ricinus communis*)

Castor oil plant is a perennial shrub or small tree (up to 4m tall) with a highly variable form but generally bearing large, sharply serrated glossy leaves which are green, red, purple or brown. It may outcompete and shade out other plant species in disturbed habitats, pasture and cleared forestry plantations. It is extremely poisonous and poses a risk to humans, livestock, native herbivorous and frugivorous animals, and pets. Seeds can kill adult humans if ingested. It is also strongly allergenic and contact with sap can cause rashes.



### Cat's claw creeper (*Macfadyena unguis-cati*)

Cat's claw creeper is a perennial woody vine with yellow trumpet flowers borne in spring and seed capsules up to 95cm long. It is capable of smothering trees, causing canopy collapse, or growing as a dense groundcover mat, suppressing the regeneration of vegetation in riparian and forest ecosystems. It has been recorded strangling trees in plantation forests, often resulting in tree mortality.



Weedbusters

### *Cenchrus* spp. (*Cenchrus* spp. syn. *Pennisetum* spp. excl. kikuyu and pearl barley; *C. clandestinus* and *C. americanus*)

*Cenchrus* species are a group of perennial-annual tufted, rhizomatous or straggling grasses. They out-compete and inhibit the growth of native plants in coastal ecosystems. They are consequently associated with reductions in native plant species richness and changes in vegetation structure. Overseas, *Cenchrus* spp. are invasive on scoria lava, therefore Rangitoto may be vulnerable to invasion.



### Century plant (*Agave americana*)

Century plant is a perennial succulent with sharp teeth on the margins of its large, fleshy leaves. A 7-10m tall flower head is produced when the plant is about 10 years old. Invades sand dunes, cliffs and other coastal ecosystems. Can form dense monocultures that suppress native plants. Often spread in dumped garden waste.

Note: Rules 7.7.10.1.1 to 7.7.10.1.6 come into force on 1 April 2020 for century plant.



Weedbusters

### Chilean flame creeper (*Tropaeolum speciosum*)

Chilean flame creeper is a perennial climber capable of reaching at least 10m into canopy with five-fingered leaves, tubular red/pink flowers borne November-April and blue-black berries. It suppresses native plants via smothering and shading in forest and scrub ecosystems. Bird dispersal has the potential to facilitate spread to inaccessible areas.



Department of Conservation

### Chilean glory creeper (*Eccremocarpus scaber*)

Chilean glory creeper is a perennial climbing subshrub up to 6m with tubular orange/red flowers borne in inflorescences September-May. It suppresses co-occurring vegetation via smothering habitat. Scrub, forest edges and riparian margins are most at risk from invasion.



Weedbusters

### Chilean rhubarb (*Gunnera tinctoria*)

Chilean rhubarb is a clump-forming, herbaceous perennial up to 2.5m tall by 4m wide, with very large prickly leaves and minute flowers occurring in early summer. It most commonly naturalises in coastal and riparian areas; forming dense colonies that shade-out or suppress native plants and reduce the seed rain from adjacent species. It is a potential threat to culturally important plants including harakeke and watercress.



### Chinese fan palm (*Trachycarpus fortunei*)

Also known as: Chinese windmill palm, chusan palm

Chinese fan palm is a 4-12m tall palm with an unbranched trunk, fan shaped leaves and sharp marginal teeth on the petioles. Fruit are yellow but turn blue-black with age. The large leaves cast deep shade, reducing native seedling recruitment and growth. Urban reserves are most at risk of invasion due to human cultivation of the plant in surrounding areas. Intact forests in remote areas are also at risk long-term due to bird-mediated seed dispersal and shade tolerance, potentially resulting in dominance of the forest understorey. Invasion may also result in the modification of soil biota communities and nutrient cycling impacts in these ecosystems. There is the potential for direct competition with taonga species such as nikau.

Note: Rules in this section come into force for Chinese fan palm on 1 April 2021.



### Chinese holly grape (*Mahonia lomariifolia*)

Chinese holly grape is a perennial evergreen shrub up to 4-5m tall with spiky leaves, yellow flowers borne in upright, terminal racemes during winter and oval green berries ripening to purple. It is shade tolerant, and known to invade closed canopy vegetation in forest ecosystems, forming thickets which exclude other understorey plants.

Note: Rules 7.7.10.1.1 to 7.7.10.1.6 come into force on 1 April 2020 for Chinese holly grape.



Rebecca Stanley

### Chocolate vine (*Akebia quinata*)

Chocolate vine is a deciduous or evergreen (climate dependent) climbing plant up to 20m with palmate leaves and brown-purple flowers, borne in spring.

It is a vigorous climber capable of smothering native vegetation and preventing recruitment. It is partially shade tolerant, capable of invading margins or light gaps of intact native forest. Shrublands and re-vegetated or regenerating plant communities are most at risk.



Weedbusters

### *Clematis flammula*

*Clematis flammula* is a deciduous perennial woody climber, reaching up to 5-6m with white flowers between January and March and hairy plumed seeds. It has a smothering climbing habit and moderate shade tolerance therefore scrub and bush margins are most at risk of invasion, including in coastal areas. Uncertain to what extent intact forest is at risk. Closely related plants are highly invasive.



### Climbing asparagus (*Asparagus scandens*)

Climbing asparagus is a scrambling or climbing perennial, with tuberous fleshy roots, thin scale-like leaves, red berries and long, usually white, solitary flowers. It smothers forest floor and understorey up to 4m, causing reductions in native plant abundance and species richness, and promoting further invasion by other pest plant species via raised light levels. In the long-term there is the potential for increased erosion through catastrophic loss of canopy and an overall transformative loss of forest ecosystems throughout the region.



### **Climbing dock (*Rumex sagittatus*)**

Also known as: creeping dock, rambling dock

Climbing dock is a scrambling perennial vine trailing to 4m long with heart-shaped yellow or pink-red fruit, arrow-shaped leaves and small, green to pink flowers. It is a fast grower, scrambling over plants up to 3m tall, replacing low canopy plants and preventing the establishment of native seedlings in disturbed forest, scrub, coastal and riparian ecosystems.



### **Climbing gloxinia (*Lophospermum erubescens*)**

Climbing gloxinia is a climbing perennial herb with triangular leaves and red, pink or white trumpet-shaped flowers borne January to March. Moderate impacts may be expected based on its smothering habit and history of invasiveness. It is capable of invading very harsh dry environments. Threatened species may be at risk in a wide range of habitats including in rocky outcrops, grasslands and forests.



### **Coast banksia (*Banksia integrifolia*)**

Coast banksia is a large shrub or tree up to 15m high with rough bark, narrowly elliptical leaves, cylindrical inflorescences bearing numerous pale yellow to green flowers and woody fruiting cones. It grows in coastal and lowland sites, often on sand dunes, along roadsides, forest margins, and other open habitats; shading out existing vegetation and transforming the habitat.





### Coltsfoot (*Tussilago farfara*)

Coltsfoot is a perennial herb with deeply lobed, toothed leaves and yellow flowers in spring. It is mat-forming and an aggressive grower therefore may out-compete other plant species in moist habitats including riparian margins and wetlands. It is reported as competitive against pasture grasses and contains alkaloids which can be toxic to livestock and humans. It may also compete strongly with crop plants.



Weedbusters

### Cotoneaster (*Cotoneaster glaucophyllus* and *C. franchetii*)

Cotoneaster are evergreen shrubs up to 3m tall with small white flowers borne in clusters and poisonous red berries. They are capable of forming dense thickets which prevent the regeneration of other plant species in coastal scrubland and grasslands, including on ngā tūpuna maunga.



### Crack willow (*Salix fragilis*)

Also known as: brittle willow

Crack willow is a shrub or tree to 25m high with green to brown stems that make an audible crack when bent and long catkins. It can affect native plant species in wetlands and riparian sites through competition, shading and altered hydrology. It causes blockages, flooding and structural changes in waterways and may alter soil decomposition cycles.



Weedbusters

### Creeping fig (*Ficus pumila*)

Creeping fig is a perennial climber up to 10m+ with purple to pink fruit. It is a vigorous climber, shade tolerant and capable of smothering co-occurring vegetation on rock walls and scoria faces. Based on other fig species, there is a high risk of the obligate pollinating wasp establishing in Aotearoa / New Zealand in the future, increasing the chances of creeping fig naturalising. High value sites such as Rangitoto and Maungawhau / Mt Eden rock forest may be at risk.



Colin Ogle

### Dally pine (*Psoralea pinnata*)

Dally pine is a perennial evergreen shrub or small tree up to 5m tall with long thin leaflets and pea-shaped white-blue flowers borne November to January. It has the potential to dominate short-stature plant communities such as gumlands and herbfields through competition and nitrogen-fixation. It may replace mānuka in early successional ecosystems, potentially impacting upon the mānuka honey industry.

Note: Rules 7.7.10.1.1 to 7.7.10.1.6 come into force on 1 April 2020 for dally pine.



### Darwin's barberry (*Berberis darwinii*)

Darwin's barberry is an evergreen shrub able to reach 10m in forest with needle-sharp spines, serrated leaves and golden flowers hanging in clusters from July to February, followed by purplish-black berries. It is a serious forestry pest, likely to infest understorey in thinned stands, and may impact the horticultural industry as a carrier of various plant pathogens. It outgrows and outcompetes native plants in disturbed forest and scrubland, altering forest understorey and light regimes.



### Devil's tail (*Persicaria perfoliata*)

Also known as: mile-a-minute weed, tearthumb.

Devil's tail is a sprawling vine up to 6m long with downward pointing hooks on the stems and undersides of the leaves, small white flowers and metallic blue fruit. It is a pest of nurseries and forestry plantations, impairing juvenile tree growth. It is likely to outcompete and smother native plants in forest gaps, riparian areas and other open, disturbed habitats. Barbs may injure children and pets.



### Divided sedge (*Carex divisa*)

Divided sedge is a tufted perennial sedge growing up to 80cm with green maturing to pale brown inflorescences, consisting of overlapping spikes. It is capable of forming almost monocultural swards, excluding native species and sometimes resulting in loss of plant zonation across brackish coastal habitats. It has further potential to impact on the mauri and customary uses of a range of wetland ecosystems.

Note: Rules 7.7.10.1.1 to 7.7.10.1.6 come into force on 1 April 2020 for divided sedge.



John Smith-Dodsworth

### Drooping prickly pear (*Opuntia monacantha* and other spp.)

Drooping prickly pear is a group of large cacti with oval or circular stem segments and thick cylindrical trunks that have a drooping habit on larger specimens. It has the potential to decrease native plant cover in coastal ecosystems due to competitive exclusion and may out-compete native plants for pollinators, resulting in potential impacts on native plants' seed-set and/or invertebrate pollinator communities. Stem-succulent species are not characteristic of the native flora, and invasion by such species represents a substantial structural change to the ecosystem. Invasion may impede access to coastal areas due to sharp spines.



### Dusky coral pea (*Kennedia rubicunda*)

Dusky coral pea is a scrambling perennial leguminous vine with clusters of dark red-pink-purplish pea-shaped flowers held in inflorescences between August and December. It has a rapid growth rate and smothers shrubs and trees, particularly in open or forest edge habitats.



### Eel grass (*Vallisneria australis*)

Eel grass is a bottom-rooted freshwater aquatic plant with strap-like leaves up to 5.5m long. Male flowers consist of large pollen-filled sacs produced at the base of mature plants. Female flowers are small and green and produced on the end of a very long, spirally coiled stalk that can extend to the water's surface. It is capable of forming dense stands which may displace other submerged plant species in suitable wai māori / freshwater habitats. These stands have the potential to impede drainage, exacerbating flooding, and impede recreational water uses. Entanglement in the weed can lead to drowning.



### Egeria (*Egeria densa*)

Egeria is a bottom-rooted submerged perennial aquatic herb with long stems (3m and over) and white flowers borne at the water's surface between November and January. It forms dense stands displacing native aquatic plants and altering the habitat structure of macroinvertebrates and fish. Resultant impacts can include lowered dissolved oxygen levels, increased sedimentation, changes to primary production and nutrient cycling capacity of the invaded water body.



### **Elaeagnus (*Elaeagnus x reflexa*)**

Elaeagnus is a dense evergreen scrambling perennial shrub with stems up to 20m, leaves with irregular wavy margins, small pale white or brown flowers borne in clusters in autumn and red/orange fruit. It smothers co-occurring vegetation, especially in regenerating bush, forest margins and canopy gaps. It is also capable of forming dense thickets that may impede recreational access to natural areas.



### **Elephant's ear (*Alocasia macrorrhiza* syn. *A. brisbanensis*)**

Also known as: spoon lily

Elephant's ear is a perennial herb up to c.2m tall with large arrow-shaped leaves and numerous small cream flowers produced in summer and autumn. It is capable of forming dense stands which may displace native plants in wetlands and other damp habitats. It is poisonous and can invade damp pasture, therefore may be avoided by livestock. Contact with the plant can lead to skin and eye irritation.



### **Elodea<sup>2</sup> (*Elodea canadensis*)**

Elodea is a submerged, bottom-rooting freshwater aquatic plant up to 5m tall, with small white and purple flowers borne at the surface of the water from November to January. It can reduce flow velocity and impede gas exchange in freshwater ecosystems resulting in lowered dissolved oxygen levels and increased sedimentation. It may also impede water flow in drains, exacerbating flooding.



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<sup>2</sup> Pest outside of secure containment only.

### English ivy (*Hedera helix* subsp. *helix*)

English ivy is an evergreen perennial root-climbing plant with lobed leaves, numerous yellow-green flowered umbels from August to December and deep purple or black berries. It forms dense monocultural groundcover, substantially lowering ground-level light availability and preventing regeneration of other vegetation in roadsides, native forest and riparian ecosystems. Dense mats combined with rapidly decomposing litter have potential to alter decomposition dynamics and nutrient cycling within invaded ecosystems. Contact with the plant can cause contact dermatitis.



### False tamarisk (*Myricaria germanica*)

False tamarisk is an evergreen shrub up to 2m tall with small, pink flowers borne in summer. It is capable of colonising riparian margins and braided river beds. It can reduce available habitat for nesting birds in braided riverbeds, while also providing cover for predators.



Trevor James, Agresearch

### Fatsia (*Fatsia japonica*)

Fatsia is a shrub or small tree up to 6m tall with large glossy leaves, black fruit and white flowers borne in umbels between March and May. It is shade tolerant and bird dispersed and therefore capable of invading intact native bush. It is capable of forming multi-stemmed thickets which, with its very large leaves, cast deep shade preventing native species regeneration below. It is poisonous if ingested and the leaves are allergenic, causing contact dermatitis in some people.



Colin Ogle

Note: Rules in this section come into force for fatsia on 1 April 2021.

### Ferny asparagus (*Asparagus plumosus*)

Ferny asparagus is a scrambling perennial plant with widely branched stems, purple to black berries and small, white flowers borne November and December. Based on closely related invasive species, ferny asparagus has the potential to smother native vegetation, reducing regeneration leading to canopy collapse, and may be associated with altered invertebrate communities. Native forest and coastal habitats are most at risk from invasion.



### Firethorn (*Pyracantha angustifolia*)

Firethorn is an evergreen spiny shrub growing over 2.5m tall with densely hairy stems, white flowers borne in clusters between December-January and yellow to orange fruit. Firethorn is capable of restructuring woody plant communities, including acting as a nurse plant for privet, in semi-open or disturbed sites.



### Formosa lily (*Lilium formosanum*)

Formosa lily is a perennial herb with erect unbranched stems up to 1m tall and large, white tinged with purple, trumpet-like flowers, mainly borne January-March but sometimes year round. It is most invasive in disturbed or open coastal ecosystems including sand dunes, cliff faces and forest canopy gaps where it forms dense stands. Coastal species potentially at risk from competition may include culturally significant species such as harakeke.



**Furcraea (*Furcraea foetida*, *F. parmentieri* and *F. selloa*)**

Furcraea are perennials up to 3m wide with fleshy or leathery leaves held in rosettes, and conspicuous spines or minute teeth along the leaf margins. It forms monocultures in coastal and other open ecosystem potentially excluding native plant species and altering habitat structure for native animals. Ecosystem impacts are probable due to the lack of functionally equivalent native species.

Note: Rules in this section come into force for furcraea on 1 April 2021.



**German ivy (*Senecio mikanioides*)**

Also known as: water ivy, parlor ivy

German ivy is a perennial scrambling vine up to 5m bearing lobed bright green leaves and yellow button-like flowers. It aggressively smothers the understorey in coastal areas, riparian and forest margins and clearfelled forestry plantations, suppressing seedling regeneration and facilitating other invasive vines. It is toxic to aquatic animals and terrestrial invertebrates.



Weedbusters

**Giant reed (*Arundo donax*)**

Also known as: bamboo reed, donax cane, arundo grass, cow cane, river cane, reed grass.

Giant reed is a sturdy perennial grass with large, spreading clumps of thick culms up to 6m tall, maize-like leaves and large fluffy purplish to silver inflorescences standing above the foliage. It invades riparian areas, wetlands and saltmarshes, altering hydrology by blocking water flow and displacing native plants by creating vast monocultures. Dense stands can impede drainage and exacerbate flooding in agricultural systems.





### **Giant rhubarb (*Gunnera manicata*)**

Giant rhubarb is a clump-forming, herbaceous perennial up to 2.5m tall by 4m wide, with very large prickly leaves. It competes with native plant species, reducing native biodiversity in riparian margins, wetlands, coastal areas and cliffs. The large leaves can also prevent native seedlings from growing underneath them.



Dinkum

### **Goat's rue (*Galega officinalis*)**

Goat's rue is a perennial clumping herb up to 1m tall with purple or white pea-like flowers borne in spikes. It invades pastures and if consumed can be toxic to livestock. Potential mechanisms for impacts in riparian margins and riverbeds include nitrogen fixation and competition with native plant species.



### Gorse (*Ulex* spp.)

Gorse is a spiny perennial shrub up to 4m tall with yellow pea-like flowers produced from May to November and explosive seed pods. It is a serious pest of the primary production industry where it will readily invade forestry plantations and pasture, reducing food for livestock. It also forms dense stands and out-competes native vegetation in shrubland, forest margins and coastal habitats. Native forest succession through gorse can result in a different vegetation composition and lower diversity than succession through native early succession plants. Its nitrogen-fixing capacity can increase soil nitrogen in invaded areas, to the detriment of specialised plants including herbs and orchids. Dense prickly stands can impede access to recreational and culturally important sites.



#### Rules:

- 7.7.10.1.8 All occupiers of any land that is located within rural Auckland (Occupier A) must destroy all gorse plants on that land within 10m<sup>3</sup> of any property boundary that is adjacent to land being used for commercial primary production (Occupier B) and where that land occupier (Occupier B) is destroying all gorse on that land.

This rule is a Good Neighbour Rule.

The purpose of rule 7.7.10.1.8 is to require the occupier of a place to take specified actions to eradicate or manage the pest or a specified pest agent on the place.

A breach of this rule is an offence under s154N(19) of the Biosecurity Act.

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<sup>3</sup> On steeply sloping land this will be interpreted as 10m horizontally out from the boundary.

### **Grey willow (*Salix cinerea*)**

Also known as: pussy willow, shrub willow, grey sallow

Grey willow is a deciduous shrub or small tree up to 7m high with greenish grey to dark purple stems, oval leaves and 1.5–3.5cm long catkins appearing before the leaves. It forms vast dense stands and thickets causing blockages, flooding and structural changes in waterways. It can affect native plant species in wetlands and riparian ecosystems, through competition, shading and altered hydrology.



### **Guava (*Psidium cattleianum*)**

Guava is a large perennial shrub or small tree up to 6m tall with smooth, oval leaves, white flowers borne from January to March and green ripening to dark purple-red fruit. It is highly shade tolerant, and therefore capable of invading intact native forest vegetation. It has the potential to form monocultures in a wide variety of ecosystems and is associated with reduced recruitment of native species beneath dense guava stands. Guava can re-structure the vegetation profile of forests, reducing the density of the understorey and overstorey while increasing canopy volume in the midstorey. There is also potential to exacerbate impacts from animal pests such as possums and feral pigs by creating an important food source.



Note: Rules 7.7.10.1.1 to 7.7.10.1.6 come into force on 1 April 2020 for guava.

### Guinea grass (*Megathyrsus maximus*)

Also known as: green panic grass, elephant grass, buffelgrass

Guinea grass is a perennial bunchgrass with erect stems reaching up to 3.5m height and reddish spikelets. It has the potential to be problematic in the horticultural industry as an aggressive invader of crops, orchards and vineyards and as an alternative host for insect pests and diseases of cereal crops. It is a strong competitor and invader of open habitats, including grasslands and riparian ecosystems, and is a potential fire hazard, capable of increasing fire severity and spread.



### Gypsywort (*Lycopus europaeus*)

Gypsywort is an emergent aquatic perennial herb up to 1m tall with toothed leaves and small, white to pale pink flowers borne summer-autumn. It is particularly invasive in wetlands and riparian margins, spreading rapidly via water movement once in a catchment, followed by localised vegetative spread. It is fast growing and has the potential to displace native vegetation in invaded ecosystems.



### Hakea (*Hakea* spp.)

Also known as: prickly hakea, willow-leaved hakea

Hakea are large shrubs or small trees with spiny or soft leaves and white and yellow flowers. It is a dominant competitor in open sites with low fertility soil including low forest, scrub, coastal and gumland habitats. It alters moisture regimes, adds to fire risk, alters vegetation succession and contributes to the local extinction of rare native fern, orchid and shrub species.



Trevor James, Agresearch

### Hawkweed (*Pilosella* spp. syn. *Hieracium* spp.)

Hawkweeds are perennial broadleaf herbs 15-40cm in height with narrow leaves and yellow to orange flower heads produced during spring and summer. Hawkweed infestations can reduce feed plant cover and the productivity of pasture, in some cases farmland has been abandoned as a result of lost productivity. They prefer cooler climates but have broad environmental tolerances and may invade grasslands, scrubland or riparian margins, potentially excluding native plant species.



Weedbusters

### Hawthorn (*Crataegus monogyna*)

Hawthorn is a deciduous shrub or small tree (5-14m high) with thorny stems, coarsely toothed leaves and small white flowers produced in spring followed by dark red fruit. Dense hawthorn thickets can exclude native plants in grasslands, scrublands and disturbed native forest. It can also facilitate exotic birds and mammals via the provision of a food resource. Root intrusion on tūpuna maunga affects threatened plants and archaeological features.



### Heather (*Calluna vulgaris* excl. double flowered cultivars)

Heather is a bushy evergreen perennial shrub up to 50cm tall with woody stems, small stalkless leaves and small purple bell shaped flowers produced in spring. It can invade poor quality pasture, reducing the cover of preferred food plants and lowering productivity. Dense thickets can out-compete native plants in tussock, grasslands and herfields. It can also reduce the diversity of native invertebrates by altering the availability of resources and habitat structure.



Udo Schmidt

### Hemlock (*Conium maculatum*)

Also known as: poison hemlock

Hemlock is an annual, biennial or perennial herb, 1–2.5m tall with fernlike leaves and clusters of small, white flowers. It is pest plant of poorly drained habitat including riparian margins, swamp, forest margins and pasture. It is acutely poisonous and poses severe health risks to humans, livestock and native animals upon ingestion. Severe cases can be fatal.



### Himalayan honeysuckle (*Leycesteria formosa*)

Himalayan honeysuckle is a perennial shrub up to 2m tall with heart-shaped leaves, drooping spikes of white funnel-shaped flowers produced from December to May and dark purple berries in autumn. It is fast growing and forms dense stands that may exclude native plants in native and plantation forest, shrubland and riparian margins. It can rapidly dominate disturbed forest areas, potentially competing with native colonisers such as tutu.



### Holly-leaved senecio (*Senecio glastifolius*)

Also known as: pink ragwort

Holly leaved senecio is an erect short-lived perennial herb up to 2m tall with serrated leaves and daisy-like purple flowers borne from September to November. It is capable of shading and displacing small-stature native plant species in a range of coastal native habitats.

Note: Rules 7.7.10.1.1 to 7.7.10.1.6 come into force on 1 April 2020 for holly-leaved senecio.



### Hornwort (*Ceratophyllum demersum*)

Hornwort is a perennial submerged aquatic plant up to 7m tall which can be anchored to sediment by stems, or forms free-floating mats. Leaves are 10-40mm long, narrow, branched and whorled forming complex architecture. Hornwort forms dense monospecific stands which can displace all native submerged vegetation down to 15m depth. The dense stands alter water flow, increase flooding risk and impede recreational access of waterbodies. Because it can grow to greater depths than other aquatic weeds, it is the species likely to have greatest impacts on deep-water charophyte meadows. Kōura are also likely to be especially impacted due to requirement for open habitat.



Rohan Wells, NIWA

### Horsetail (*Equisetum* spp.)

Horsetails are erect perennial fern-allies, rush-like in appearance, with erect jointed stems and spore cones borne in spring. They are capable of invading croplands and pasture, and are toxic to livestock. In wetland and riparian margins they are highly competitive, frequently excluding other vegetation and altering nutrient cycles.



### *Hydrocotyle umbellata*

*Hydrocotyle umbellata* is a semi-aquatic perennial, herb with tiny, white, star shaped flowers occurring in umbels of 10-60 flowers. It is a terrestrial plant in wet soils or aquatic in freshwater up to 1.5m deep. Appearance and growth form is variable depending on the invaded habitat type, either floating, creeping or mat forming. It forms dense monocultures that can exclude native plants and has the potential to hybridise with native *Hydrocotyle* spp. In agricultural systems, it may impact irrigation and drainage.



Note: Rules 7.7.10.1.1 to 7.7.10.1.6 come into force on 1 April 2020 for *Hydrocotyle umbellata*.

### **Iceplant (*Carpobrotus edulis* and hybrids)**

Iceplant is a perennial succulent herb with stems up to 6m long and red, pink or yellow flowers borne from October to February. It invades coastal habitats, directly impacting on native plant species through smothering, competition for space and other resources, and indirectly via soil chemistry modification. Impacts include reduced germination and survival of native plants, resulting in reductions in native species' richness at invaded sites. It will also hybridise readily with related native species, impacting on the genetic diversity of the native species.



### **Italian arum (*Arum italicum*)**

Italian arum is a perennial herb, up to 60cm tall with arrow-shaped leaves with cream veins and floral inflorescences comprised of a yellow spike surrounded by a pale green or cream bract. It is poisonous and avoided by livestock when invasive in pasture. It forms dense ground-cover, shading out small native plants and preventing native seedling recruitment in disturbed forest and scrublands.



### **Italian jasmine (*Jasminum humile*)**

Italian jasmine is an evergreen shrub up to 2.5m tall with yellow, tubular flowers borne year round and glossy black fruit. It can form monospecific patches, excluding native species and preventing native seedling recruitment in a diverse range of habitats, including forest, scrubland and coastal habitats.



Weedbusters



### Japanese cherry (*Prunus serrulata*)

Japanese cherry is a deciduous tree up to 12m tall with toothed leaves, pink or white flowers borne in spring and red-black fruit. It is capable of invading native forest, competing with and displacing native plants. Closely related species are highly invasive overseas and are known to reduce plant functional diversity in invaded forests. Japanese cherry has the potential to substantially increase in abundance in forest ecosystems due to bird-dispersed seed.

Note: Rules in this section come into force for Japanese cherry on 1 April 2021.



Jeremy Rolfe

### Japanese honeysuckle (*Lonicera japonica*)

Japanese honeysuckle is an evergreen climber with dark green leaves and paired fragrant white flowers with yellow corollas. The vine can grow up to 15m/year and will quickly form dense monospecific mats which smother and suppress native vegetation, harbour mice and facilitate other invasive plants in disturbed sites, river banks, bare ground, scrubland, forest margins, fragments or gaps. In orchards it is a host of several pathogens, and in forestry plantations it will overgrow young plants and chemically inhibit plant growth of some pine species



### Japanese spindle tree (*Euonymus japonicus*)

Also known as: winged euonymus, Japanese laurel

Japanese spindle tree is an evergreen shrub or small tree up to 7m height with glossy leaves, fleshy pink seed capsules and clusters of small and greenish flowers. It forms dense stands, assumed to crowd out native plants and prevent seedling recruitment, in disturbed bush, forest margins, scrubland and coastal ecosystems.



### Japanese walnut (*Juglans ailantifolia*)

Japanese walnut is a deciduous wide-spreading tree up to 15m tall with red, pink or purple flowers borne October to November. It is capable of forming dense stands and chemically inhibiting the growth of other plants, excluding native plant species in riparian and wetland habitats.



Weedbusters

### Jasmine (*Jasminum polyanthum*)

Also known as: pink jasmine, white jasmine.

Jasmine is a wiry evergreen climber up to 12m tall which produces an abundance of reddish-pink flower buds in late winter and early spring, followed by fragrant star-like white flowers. It is a rapid and vigorous climber, able to invade dense forest and smother all vegetation in the subcanopy. It is also capable of forming dense groundcover, preventing native seedling establishment in forest and disturbed ecosystems.



### Kangaroo acacia (*Acacia paradoxa*)

Kangaroo acacia is a perennial shrub up to 3m with 10mm long spines, inflorescences of many yellow flowers and leaves reduced to winged leaf stalks. It can form extremely dense stands potentially excluding native vegetation in open or disturbed sites including coastal areas, scrubland and forest margins. It is a nitrogen-fixing plant, potentially altering soil fertility, nutrient cycling dynamics and plant community compositions in invaded ecosystems.



### Khasia berry (*Cotoneaster simonsii*)

Khasia berry is a deciduous or semi-evergreen erect shrub up to 4m tall with small white or pink flowers borne November to December and orange-red berries. It is capable of forming dense stands which exclude native plant species in semi-open to open habitats, including pasture, open shrubland, forest margins, plantation forests and coastal habitats.



### Kudzu vine (*Pueraria montana* syn. *P. lobata*)

Kudzu vine is a herbaceous to semi-woody, scrambling, trailing or climbing vine up to 30m long with large lobed leaves and spikes of reddish-purple, pea-like flowers. It is a very aggressive competitor in native forest, shrubland and riparian margins; altering forest disturbance regimes, out-shading and girdling small trees and chemically inhibiting the growth of co-occurring plants.



Forest and Kim Starr

### Lagarosiphon/oxygen weed (*Lagarosiphon major*)

Oxygen weed is a bottom-rooted submerged perennial aquatic herb with downward curving leaves, arranged in spirals on the stem. It is capable of forming dense stands; displacing native aquatic herb species, altering habitat availability for fish and invertebrates, and affecting dissolved oxygen levels by reducing gas exchange. The stands can also impede recreational water access to water bodies.



Rohan Wells, NIWA

### Lizard's tail (*Saururus cernuus*)

Also known as: swamp lily, mouse's ear

Lizard's tail is a perennial emergent freshwater aquatic herb with branches bearing spikes of white inflorescences that resemble a lizard's tail. It is able to dominate the herb layer in wetlands, marshes, swamps, streams and, lake edges, potentially shading out submerged species.



### Lodgepole pine (*Pinus contorta*)

Lodgepole pine is a shrub to medium-sized tree that can live over 350 years, with cones that persist on the tree and winged seeds. It is capable of forming monocultural stands in open mid-high elevation areas. Invasion is associated with reductions in species richness and a shift towards non-native dominance of soil fungal communities. Impacts are likely to be mainly on light-demanding short-stature plant species following vegetation structure alteration from open habitat to forest.



Jeremy Rolfe

### Loquat (*Eriobotrya japonica*)

Loquat is an evergreen tree up to 8m tall with thick, leathery and wrinkled leaves, white flowers borne in many-flowered inflorescences from April to November and yellow fruit. It is shade tolerant and can be dispersed into forest via kereru/kukupā, allowing it able to invade intact canopy native vegetation and potentially dominate the mid-tier canopy. It is likely to be advantaged by warmer temperatures under climate change.



Note: Rules 7.7.10.1.1 to 7.7.10.1.6 come into force on 1 April 2020 for loquat.

### Madeira vine (*Anredera cordifolia*)

Also known as: Madeira, mignonette vine, potato vine, lamb's tail.

Madeira vine is a perennial climbing vine up to 40m long with heart-shaped or oval fleshy leaves and drooping inflorescences of small fragrant cream flowers from January to April. It can rapidly invade disturbed forest and margins, plantations, gullies, scrublands, coastline, dunes and riparian margins by smothering and sometimes crushing understorey plants.



### Male fern (*Dryopteris filix-mas*)

Male fern is a perennial fern with round sori produced through autumn and winter. It is shade tolerant, therefore intact forest is at risk of invasion, especially riparian margins, though disturbed forest may be at higher risk. It occupies a similar niche to native forest-dwelling ferns therefore may competitively displace natives in invaded ecosystems.



Jeremy Rolfe

### Marram grass (*Ammophila arenaria*)

Marram grass is a densely tufted perennial grass up to 1m tall with white-golden flower heads borne November to March. It is capable of forming extensive areas of almost monospecific cover in sand dune habitats. It traps sand, leading to substantial changes in sand dune morphology, creating dunes that are taller, steeper, more regular and more stable. It displaces native dune species such as pīngao, via rapid sand accumulation and associated burial of competing plants. It can also reduce shore bird nesting habitat through altered dune architecture.

Note: Rules 7.7.10.1.1 to 7.7.10.1.6 come into force on 1 April 2020 for marram grass.



### Mexican daisy (*Erigeron karvinskianus*)

Mexican daisy is a perennial herbaceous daisy up to 40cm tall with pink, purple or white flowers borne September to May. It forms dense groundcover mats which are observed to suppress co-occurring short-stature plants and recruitment in ecosystems that contain many at risk plant species (e.g. coastal herbfields, gumlands and off-shore islands). Based on its life-form, it may have the potential to alter functional composition of ground invertebrate communities in invaded areas.



### Mexican devil (*Ageratina adenophora*)

Mexican devil is a herb to sub-shrub approximately 1-2m tall with diamond-shaped leaves and white flowers borne in dense clusters from August to March. It invades pasture and is poisonous to horses, potentially fatal. It is capable of displacing native plants in wetland and riparian habitats, through direct competition for resources, and potentially also via chemical inhibition and altered soil microbial activity.

Note: Rules 7.7.10.1.1 to 7.7.10.1.6 come into force on 1 April 2020 for Mexican devil.



### Mexican water lily (*Nymphaea mexicana*)

Mexican water lily is a perennial bottom-rooted aquatic herb with floating heart-shaped leaves and yellow flowers borne above the water surface from October to December. It forms dense mats which can reduce dissolved oxygen levels in the water column by preventing gas exchange between water and air, and may suppress submerged aquatic plants by shading. Impacts on fish, zooplankton and other species resulting from low dissolved oxygen are probable.



Rohan Wells, NIWA

### Mickey Mouse plant (*Ochna serrulata*)

Mickey Mouse plant is a shrub up to 3m tall with serrated leaves and yellow flowers borne September to March. The fruit resemble the face of Mickey Mouse (black fruit attached to red sepals), and are produced in autumn. It is shade tolerant and bird dispersed, therefore has the potential to invade intact forest ecosystems. It is known to dominate scrub layers where invasive overseas, therefore impacts on native plants via competition and suppressing recruitment are likely.



### Mile-a-minute (*Dipogon lignosus*)

Mile-a-minute is an evergreen perennial climbing vine, with pea-like, white, pink or red flowers borne from July to January. It invades scrubland, forest margins, stream banks, wetlands, coastal areas including banks and open coastal forest; smothering trees and destroying forest structure. It is capable of nitrogen fixing and has the potential to alter nutrient cycling patterns, possibly favouring other exotic plants.



### Mist flower (*Ageratina riparia*)

Also known as: mistweed, river eupatorium.

Mist flower is a many-stemmed, erect or scrambling herb 0.5-1.5m tall with long coarsely serrated leaves and clusters of small white flowers produced from August to January. It forms dense colonies in wetlands, scrub and other damp habitats, smothering native plants, including *Hebe* spp. and preventing their regeneration. It is very likely to infest riparian margins where it causes sediment buildup, altering flow regimes and potentially causing flooding.



Weedbusters

### Monkey apple (*Syzygium smithii* syn. *Acmena smithii*)

Also known as: lilly pilly

Monkey apple is a tree up to 15m tall with glossy leaves, creamy coloured flowers borne October-January and white or pale pink/mauve fleshy fruit. It colonises native forest, especially exposed ridges, edges and regenerating secondary scrub. It is also capable of recruiting below closed canopy due to high shade tolerance, therefore intact forests are at risk of invasion. In the long-term, invasion may lead to transformative change to forest composition and structure.



### Montbretia (*Crocsmia x crocosmiiflora*)

Montbretia is a clump-forming perennial herb with sword-shaped leaves, up to 90cm tall and orange flower heads overtopping the foliage January-February. Dense stands have been observed to exclude native vegetation. Open grasslands and riparian habitats are most at risk from invasion.



Weedbusters

### Montpellier broom (*Genista monspessulana*)

Montpellier broom is an evergreen perennial shrub up to 3m high with clusters of pea-like yellow flowers produced during May-November. It can form dense thickets in pasture, reducing grazing capacity and impeding movement of stock. Seeds and leaves are poisonous to stock. It competes with tree seedlings in plantations, reducing productivity. In native forest and scrubland ecosystems it out-competes vegetation and increases soil nitrogen, altering native species composition and facilitating invasion by other weed species. Thickets can provide shelter for invasive animals (e.g. rabbits).



### Morton Bay fig (*Ficus macrophylla*)

Morton Bay fig seedlings often begin as epiphytes, growing on other trees, but eventually become large free-standing buttressed trees (up to 30m tall), often killing the host tree in the process. It has the potential to impact on native plants through competition, shading of understorey and by strangling host plants. It is bird-dispersed and therefore capable of colonising remote intact forest. There is further potential to restructure frugivore communities; including supporting elevated populations of vertebrate pests such as possums, feral pigs and birds through copious year-round fruit production.



Note: Rules in this section come into force for Morton Bay fig on 1 April 2021.



### Moth plant (*Araujia hortorum*)

Moth plant is a perennial climber with scrambling stems, glossy leaves, white or pale pink flowers borne in clusters or singly, and fleshy pear-shaped fruit. It smothers and kills plants up to medium-high canopy, preventing recruitment in forest, coastline, cliffs, shrublands, mānawa/mangroves, inshore and offshore islands, orchards and disturbed habitats. Based on its life-form, there can be long-term potential for catastrophic impacts on forest structure. Milky latex in stems, leaves and roots are poisonous and cause dermatitis.



### Nardoo (*Marsilea mutica*)

Also known as: smooth nardoo, Australian water clover, clover fern

Nardoo is a perennial aquatic fern with clover-like leaves floating flat on the water surface or held up on leaf stalks from damp ground. It reportedly shades out native, bottom-rooted aquatic plants, and competes with small native plants in wetlands and around lake edges. Impacts are likely to be moderately severe based on lifeform.



Trevor James, Agresearch

### Nodding thistle (*Carduus nutans*)

Also known as: musk thistle

Nodding thistle is an annual or biennial thistle with spiny leaves and erect flower stems bearing drooping purple flowers during spring-summer. It suppresses valued pasture plants through shading and chemical inhibition, and impedes livestock access to forage due to spines. It is most problematic in over-grazed or drought-stressed pasture.



#### Rules:

7.7.10.1.9 All occupiers of land in the Auckland region must destroy all nodding thistle plants on that land.

A breach of this rule is an offence under s154N(19) of the Biosecurity Act.

The purpose of rule 7.7.10.1.9 is to require the occupier of a place to take specified actions to eradicate or manage the pest or a specified pest agent on the place.

### Norfolk Island hibiscus (*Lagunaria patersonii*)

Norfolk Island hibiscus is a long-lived evergreen tree up to 15m tall with white to pink flowers borne predominantly between September-April. It is tolerant to harsh conditions and has the potential to compete with co-occurring native plants. Coastal ecosystems currently appear to be most at risk from invasion, but wetlands are probably also at risk due to occupancy of swamps in native range.



### **Nutgrass (*Cyperus rotundus*)**

Also known as: purple nut sedge

Nutgrass is an erect perennial rush up to 35cm tall with simple umbels of rayed inflorescences during summer. It invades a wide range of crops including maize, asparagus, root vegetables, vineyards and orchards, reducing crop yields. There is the potential for nutgrass to out-compete native species in wetlands, riparian margins and coastal areas. There is also potential for hybridisation with the closely related *C. ustulatus*.



### **Oxylobium (*Callistachys lanceolata*)**

Oxylobium is a tall evergreen shrub (3-8m high) with dense racemes of yellow/orange pea-like flowers borne in spring. It has the potential to impact native species in a variety of short-stature plant communities including in coastal, grassland and scrubland ecosystems, through competition and altered nutrient cycling. Elevated nitrogen levels may have the potential to facilitate invasion by other exotic plants.



### **Palm grass (*Setaria palmifolia*)**

Palm grass is a large dense perennial grass up to 1.5m tall with large, elongate leaf blades and small white flowers borne on spikelets in summer. Palm grass is capable of forming dense stands in a range of native ecosystem types including urban bushland, forest margins and riparian margins. It may displace native plant species and prevent recruitment. Leaf litter breaks down rapidly which may speed up nutrient cycling rates and potentially facilitate the invasion of other weeds.



**Pampas grass (*Cortaderia jubata* and *C. selloana*)**

Pampas grass is a tall clump-forming grass up to 4m, with sharp leaves, erect dense fluffy flower heads which are white-pinkish/purple but fade to dirty white-yellow/brown in cooler months. It will readily colonise burnt or disturbed sites and quickly becomes very dense, replacing native ground covers, shrubs, and ferns in coastal ecosystems and other open, disturbed habitats. It will also provide habitat for possums, rats, and mustelids. In forestry plantations it will quickly become very dense, smothering young trees and being a nuisance during harvesting. Build-up of dead leaves, leaf bases and flowering stalks creates a significant fire hazard in primary production and recreational areas.



**Paperbark poplar (*Melaleuca quinquenervia*)**

Paperbark poplar is an evergreen tree up to 20-30m tall that sheds bark in pale, papery layers and produces white flowers with pronounced stamens. It is capable of displacing native plants in freshwater and saline wetlands and open terrestrial ecosystems. It forms dense monocultural forests with sparse understorey, thus altering vegetation structure and reducing plant species' diversity. Probable impacts on macrofauna resulting from altered vegetation structure. High concentrations of essential oils make the foliage highly flammable, burning at very high temperatures. Damage to infrastructure and other economic losses from large fires can be substantial.



### Parrot's feather (*Myriophyllum aquaticum*)

Parrot's feather is a submerged, bottom-rooted perennial aquatic herb of which the top 10cm of foliage can be emergent. Sprawling foliage is pale grey-green and leaves are finely divided, feathery and arranged in whorls of 4 to 6. It is ranked as one of Aotearoa / New Zealand's worst aquatic pest plants, and is especially problematic in shallow, sheltered, nutrient rich lakes and wetlands. It can displace other plant species through rapid growth, shading and the release of biochemicals, thereby decreasing native plant species richness. An increase in cover of parrot's feather is also associated with a decrease in invertebrate abundance and diversity in invaded water-bodies.



### Perennial nettle (*Urtica dioica*)

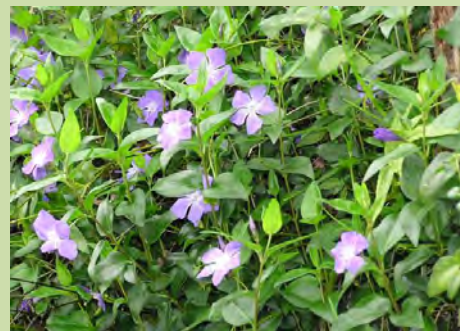
Perennial nettle is a herbaceous plant (1-2m high in summer but dies down in winter) with hairy stinging stems and leaves, and white to greenish flowers during summer months. It has the potential to form dense clumps, outcompeting native plants in a range of disturbed or moist native habitats. Stinging leaves can cause pain and swelling and stands may impede access to natural areas, particularly in riparian zones.



### Periwinkle (*Vinca major*)

Also known as: bigleaf periwinkle, large periwinkle, greater periwinkle and blue periwinkle.

Periwinkle is a scrambling perennial herbaceous groundcover plant or vine with solitary blue-violet flowers. It is a vector of Pierce's disease which infects grapes and would greatly impact vineyards. It smothers the ground, especially on stream banks, preventing native seedling regeneration and altering erosion and flow regimes.



### Phoenix palm (*Phoenix canariensis*)

Phoenix palm is a stocky palm tree with a trunk reaching up to 6m tall, large segmented leaves and orange-yellow berries. Sharp spines on the leaves are capable of causing severe injury requiring hospitalisation, with children especially at risk. It competitively excludes native vegetation due to its large size and spines, which are unpalatable to grazers. Numerous threatened species are potentially at risk in coastal ecosystems including dunes, saline wetlands, cliffs and coastal forest. It also has the potential to facilitate other invasive plants as epiphytes (e.g. climbing asparagus, ladder fern and Morton Bay fig) and provides habitat for a variety of invasive exotic birds.



### Pitted crassula (*Crassula multicava*)

Also known as: fairy crassula

Pitted crassula is a perennial succulent herb with creeping stems and pink-red flowers produced during spring and summer months. It is capable of forming dense mats which prevent the regeneration of other plant species. Coastal, island and volcanic cone ecosystems are most at risk from invasion, including under partial tree canopy. Hybridisation has been recorded with closely related species meaning there is potential for hybridisation with native *Crassula* spp.



### Plectranthus (*Plectranthus ciliatus*)

Also known as: speckled spur flower, blue spur flower

Plectranthus is a trailing or straggling herb or shrub, with serrated leaves which are purple underneath, and clusters of white and purple flowers. It forms dense mats and suppresses native seedling regeneration in a wide range of ecosystems including coastal, forest and shrubland habitats.



### Plumeless thistle (*Carduus acanthoides*)

Also known as: bastard nodding thistle, Tapapa thistle, welted thistle

Plumeless thistle is a biennial or annual thistle with with spiny, sometimes woolly stems and foliage and purple inflorescences. It aggressively infests pastures, reducing forage quality and accessibility to stock. Spines can cause injuries to humans and livestock.



### Port Jackson fig (*Ficus rubiginosa*)

Port Jackson fig is an evergreen multi-stemmed tree up to c.15m tall with large leathery leaves and small green flowers which develop into yellow-red fruit. Ecosystems with harsh rocky substrates and pōhutukawa (*Metrosideros* spp.) forests are likely to be most at risk from invasion, including volcanic cones and coastal cliffs. Invaded *Metrosideros* forests have reduced above-ground biomass and altered vegetation structure. Potential impacts on frugivore communities could include acting as a resource for possums, feral pigs and rodents.



### Prickly-leaved wattle (*Acacia verticillata*)

Also known as: prickly moses

Prickly-leaved wattle is a short-lived shrub or small tree with reduced spikey leaves, pale yellow flowers grouped on inflorescences that extend beyond the leaves during September-November. It is rated as having extremely high invasiveness potential based on its history of weediness overseas. It prefers disturbed habitats; coastal dune ecosystems and wetlands may be especially vulnerable due to frequent disturbance, suitable habitat and a lack of structurally equivalent native vegetation. Mass recruitment following fire or soil disturbance can lead to almost impenetrable stands with little understorey.

Note: Rules 7.7.10.1.1 to 7.7.10.1.6 come into force on 1 April 2020 for prickly-leaved wattle.



Jeremy Rolfe

**Privet: tree (*Ligustrum lucidum*) and Chinese (*L. sinense*)**

Tree privet is a medium sized evergreen tree growing up to 10m tall. Chinese privet is an evergreen or semi-deciduous shrub to small tree up to 5m tall. Both plants have white, fragrant flowers borne in clusters during spring-summer and purple-black fruit. Privet displaces native shrubs and trees and can form dense stands which dominate the canopy layer and prevent recruitment of native species, thereby altering vegetation structure and diversity in forest and shrubland ecosystems. Root intrusions can damage archaeological features on tūpuna maunga and other significant wāhi. Some people may have a reaction to privet, often as a cross-reactivity to their main allergens.



Tree privet

**Queen of the night (*Cestrum nocturnum*)**

Queen of the night is a perennial shrub up to 2.5m tall with greenish-white tubular flowers borne in November-March and glossy white berries. Formation of dense stands can prevent recruitment of native plant species in forest margins, stream banks, slips and other light gaps. It is poisonous and may cause hay-fever symptoms, reducing the enjoyment of the natural environment.



Weedbusters

**Queensland poplar (*Homalanthus populifolius*)**

Queensland poplar is a shrub or small tree up to 5m tall with heart-shaped leaves turning red during cooler months, and inconspicuous flowers, borne in racemes up to 17cm long. It has the potential to displace native plant species in scrubland, regenerating bush, pine forest and coastal ecosystems, and may become a notable pest plant of roadsides and gardens.



Weedbusters



### Queensland umbrella tree (*Schefflera actinophylla*)

Queensland umbrella tree is a multi-stemmed tree up to 10m tall with large glossy compound leaves and red or pink flowers borne in large, branched clusters near the top of the tree. It is bird-dispersed, shade-tolerant and fast growing therefore competitive exclusion and replacement of intact native vegetation could be expected, particularly in association with warming climatic conditions. The closely related taonga species patete (*S. digitata*) may directly be impacted through competition or other mechanisms.

Note: Rules in this section come into force for Queensland umbrella tree on 1 April 2021.



### Ragwort (*Jacobaea vulgaris* syn. *Senecio jacobaea*)

Also known as: tansy ragwort, St James' wort

Ragwort is an erect biennial or perennial herb, usually growing to 60cm with bright yellow flowers clustered at the end of the branches. It forms dense stands in pasture, potentially reducing pasture production, and is toxic to livestock. Ragwort can also invade open scrubland and may be associated with an altered abundance of some invertebrate species. Extensive handling of the plant can cause skin irritation and allergies.



### Red dragon (*Persicaria microcephala*)

Red dragon is a perennial herbaceous vine which can be distinguished by foliage turning red in spring and small white to pink flowers borne in autumn. It is capable of forming dense mats up to 1m tall, or taller, scrambling over other plants or structures. It has the potential to invade a wide variety of ecosystems including riparian and forest margins. Impacts are likely to be similar, although to a lesser extent, to the highly invasive closely related species Chinese knotweed *P. chinensis*.

Note: Rules 7.7.10.1.1 to 7.7.10.1.6 come into force on 1 April 2020 for red dragon.



© Acabashi

### Red valerian (*Centranthus ruber*)

Red valerian is a perennial herb up to 80cm tall with bluish green leaves and pink, red or white flowers borne from November-June. It is invasive overseas, displacing native vegetation, and is likely to be most problematic in dry, rocky coastal ecosystems in Tāmaki Makaurau / Auckland, including Rangitoto. Threatened short stature species may be especially vulnerable to shading and competition for other resources.

Note: Rules 7.7.10.1.1 to 7.7.10.1.6 come into force on 1 April 2020 for red valerian.



Colin Ogle

### Reed sweet grass (*Glyceria maxima*)

Reed sweet grass is an erect clumping perennial grass, reaching almost 2m, with long, branched yellow-green to purple tinged flower heads. It produces creeping rhizomes which can form dense mats that are attached at the bank but are floating in deeper water in still or slow moving water bodies. These dense mats can trap sediment and accumulate masses of decomposing vegetation; altering stream morphology, dissolved oxygen levels and other biophysical properties of invaded freshwater ecosystems.



### Rhamnus (*Rhamnus alaternus*)

Also known as: evergreen buckthorn

Rhamnus is an evergreen shrub up to about 5m high with glossy serrated leaves, small green flowers and dark glossy red or black fruit. It forms dense stands, preventing the recruitment of native plants in scrublands, forest margins and plantations. It will also act as low scrub on coastal cliffs, inshore and offshore islands and rocky outcrops.



**Rhaphiolepis / sexton's bride (*Rhaphiolepis umbellata*)**

Rhaphiolepis / sexton's bride is a perennial shrub up to 3m tall with white and pink flowers borne in inflorescences between July and December, and purple-black fruit ripening between March and April. It invades coastal areas, particularly coastal cliffs, displacing native vegetation.



**Rhus tree (*Toxicodendron succedaneum*)**

Rhus tree is a deciduous tree up to 8m tall with pinnate leaves that turn red in autumn and yellow-green flowers borne in inflorescences up to 200mm long. It invades urban and coastal habitats, wastelands and bush margins and poses a high risk to human health. Contact with sap can cause severe contact dermatitis characterised by itchy, burning red welts and swelling. Rhus tree is also rated as the most allergenic plant in Aotearoa / New Zealand. Naturalisation can therefore substantially reduce the ability to enjoy the outdoor environment.



**Rough tree fern (*Cyathea cooperi*)**

Also known as: Australian tree fern  
Rough tree fern is a sporophyte up to 8-12m tall that predominantly invades disturbed rainforest and forest edges, but has the potential to also invade relatively undisturbed forest and mānuka-kānuka gumlands. It is a highly efficient competitor, displacing co-occurring native ferns in its invasive range overseas. Its strategy of rapid growth and rapid decomposition alters nutrient cycling in its invasive range overseas compared with co-occurring native ferns.



Peter de Lange

### Royal fern (*Osmunda regalis*)

Royal fern is a tall deciduous perennial fern with fronds up to 3m long. It forms dense stands in wetlands and freshwater ecosystems, which are likely to impact on native fauna and flora through mechanisms such as competition or habitat restructuring. It has the potential for obstructing access and reducing enjoyment of the natural freshwater environment, and may impact on the mauri of wai māori.



### Rum cherry (*Prunus serotina*)

Rum cherry is a medium-sized deciduous tree 15 -20m in height with glossy, toothed leaves, white flowers borne in clusters late spring and drupes of green to purple-black fruit. Bird dispersed seeds combined with efficient gap utilisation may enable rum cherry to invade forest as well as shrubland and grassland. Thickets can reduce plant species- and functional-diversity in invaded ecosystems. Fruit could provide a food resource for exotic mammals (e.g. possums and rats).



John Smith-Dodsworth

### Saffron thistle (*Carthamus lanatus*)

Also known as: woolly distaff thistle, downy safflower

Saffron thistle is a winter annual or biennial herb with glossy spined leaves and yellow flowers bearing a bract of prickles below. It is an unpalatable pasture pest competitive with desirable pasture species. Infestations can impede stock movement and sharp spines cause injuries to the eyes and mouths of grazing animals. It can compete with crops, and impede harvesting equipment with tough stems. It is also likely to be a reservoir of crop viruses and bacteria.



Trevor James, Agresearch

### Salt water paspalum (*Paspalum vaginatum*)

Salt water paspalum is a perennial grass with long creeping stolons and leathery, grey-green leaf blades, up to 8cm long. It can dominate high priority ecosystems including tidal flat margins and coastal habitats, forming near monocultures which exclude native plants and alter plant community composition. Burrowing fauna such as crabs may be excluded in invaded habitats, and invertebrate communities shifted towards more terrestrial assemblages. Monocultures can also alter foraging habitat and food availability for shore birds, leading to avoidance of invaded areas by some bird species overseas, and can alter spawning and feeding grounds of culturally important fish such as pātiki / flounder.

Note: Rules 7.7.10.1.1 to 7.7.10.1.6 come into force on 1 April 2020 for salt water paspalum.



### *Selaginella* spp. (*Selaginella martensii*, *S. moellendorffii*, *S. uncinata*)

*Selaginella* spp. are creeping perennial fern allies with irregular, branched stems and glossy, green scale-like 'leaves' (microphylls). They grow rapidly and can form dense mats in damp habitats including disturbed and intact forest and riparian margins. They have the potential to exclude native ground cover plants and prevent establishment of seedlings in invaded ecosystems. Closely related African club moss *S. kraussiana* is invasive in Aotearoa / New Zealand.

Note: Rules 7.7.10.1.1 to 7.7.10.1.6 come into force on 1 April 2020 for *Selaginella* spp.



### Sharp rush (*Juncus acutus*)

Sharp rush is a perennial spiny rush up to 1m tall with sharp tips and clumped green to brown flower heads borne in summer followed by red, orange or brown fruit. It forms dense stands which can displace native salt marsh vegetation, impair plant recruitment, reduce native plant richness and alter invertebrate communities.

Note: Rules 7.7.10.1.1 to 7.7.10.1.6 come into force on 1 April 2020 for sharp rush.



### Sheep's bur (*Acaena agnipila*)

Sheep's bur is a clump-forming perennial herb with toothed leaflets, spiny purple flowers anthered on narrow flower spikes and fruit covered in numerous, red barbed spines. It is predominantly a pest of the sheep and beef industry, contaminating wool when burrs become tangled in sheep wool.



Harry Rose

### Skeleton weed (*Chondrilla juncea*)

Skeleton weed is a biennial or perennial herb with yellow flowers borne in December-March. It is primarily a pest of disturbed or production ecosystems and has the potential to invade over-grazed pastures, vineyards and cereal crops.



Leo Michels

### Smilax (*Asparagus asparagoides*)

Smilax is a scrambling perennial plant with branched green stems up to 3m and greenish-white flowers appearing between July and August, followed by red berries. It forms dense patches and smothers low growing plants and seedlings, usually in low canopy forests or coastal habitats. These dense stands can also obstruct access to recreational areas and smother garden plants.



### Snow poppy (*Eomecon chionantha*)

Also known as: Chinese woodland poppy, Chinese bloodroot, dawn poppy

Snow poppy is a low growing perennial herb with small leathery scallop-shaped leaves, white and yellow flowers and stems that ooze orange sap if crushed. It can form dense monospecific mats, smothering native plants and preventing native seedling establishment in moist sites, including the understorey of bush ecosystems.



Weedbusters

### Soap aloe (*Aloe maculata*)

Soap aloe is a perennial succulent with thick grey-blue frosted leaves bearing toothed margins and racemes of yellow, orange, pink or red flowers, erect at first then drooping. It has a history of naturalisation overseas, with a documented ability to form extensive localised infestations covering hundreds of square meters in which it is presumed to displace native plant species. Coastal and island ecosystems are most at risk of invasion by soap aloe. Impacts on fauna are also probable due to altered habitat structure and resource availability.

Note: Rules in this section come into force for soap aloe on 1 April 2021.



Stan Shebs

### Spanish broom (*Spartium junceum*)

Spanish broom is a deciduous shrub up to 3m tall with yellow pea-like flowers borne in loose racemes during summer and autumn. It is invasive in disturbed sites, often on hill country but also including poor or retired pasture, cliffs, transport corridors and riparian margins. Spanish broom is capable of forming dense monospecific stands which can reduce the cover of native plants in invaded habitats. As a nitrogen fixer, it has the potential to alter plant community compositions, including facilitating other exotic plant invasions, through elevated soil nutrient levels.

Note: Rules 7.7.10.1.1 to 7.7.10.1.6 come into force on 1 April 2020 for Spanish broom.



### Spanish heath (*Erica lusitanica*)

Spanish heath is a perennial shrub growing up to 2m tall with leaves in whorls of 3-4 and small, red, pink or white flowers borne in racemes during March-December. It can be a serious problem in infertile hill country pasture, especially in areas of high rainfall, being unpalatable to stock. Short-stature native plant communities such as herbfields, dune slacks, fernland and scrubland are most at risk from invasion and potential displacement by Spanish heath.



Weedbusters

### Spartina (*Spartina alterniflora*, *S. anglica* and *S. x townsendii*)

Spartina is an erect perennial grass growing up to 0.5-1m tall with fleshy rhizomes enabling plants to spread to form dense clumps or swards. It can reduce large estuaries and shallow harbours to thin drains surrounded by rough pastures and will trap sediment, raising levels above the high tide mark. It destroys intertidal zonation and habitat, and smothers tauranga mātaītai shellfish beds thereby preventing kaimoana harvesting. Adventive grasses often succeed spartina, creating dry meadows, and leading to immense biodiversity loss.



Spartina Sustained Control programme applies only to Kaipara harbour as defined in Map 12.

See also Progressive Containment programme for remainder of region (section 7.7.9).

### Spiny broom (*Calicotome spinosa*)

Spiny broom is a many-branched perennial shrub up to 3m tall with spines up to 40mm long, solitary, yellow flowers borne spring-summer and flattened seed pods. It forms dense stands that may reduce the grazing potential of pasture and out-compete tree seedlings in plantation forest. Thickets can shade out native plant species and compete for resources. It is a nitrogen fixer and can increase soil nitrogen to the detriment of low nutrient specialist native species, potentially facilitating other exotic species.



Trevor James, Agresearch



### Strangling fig (*Ficus microcarpa*)

Strangling fig is an evergreen tree when mature with thick, leathery leaves and tiny flowers, hidden within the fig-like reddish fruit. The pollinator wasp has recently arrived in Tāmaki Makaurau / Auckland, therefore the reproductive potential is high. It is likely to compete with and strangle native plants, and shade out seedlings and understorey species as it has done overseas. Vegetation communities on volcanic cones, including Rangitoto, could be at risk as other introduced *Ficus* species have been found in these habitats. Pōhutukawa, mānawa/mangrove and other forest types may also be at risk, particularly in coastal areas. Fruit may facilitate introduced birds and mammals through provision of food source.



Forest and Bird

### Sweet briar (*Rosa rubiginosa*)

Sweet briar is a dense, perennial, deciduous shrub (2-3m high) with stems bearing thorns and clusters of pink flowers produced in spring-summer. It can invade unimproved pasture, reducing the cover of desirable pasture species and thereby pasture productivity. Thickets can also impede the movement of stock and farm vehicles. It is an aggressive coloniser of disturbed native vegetation including open shrubland, disturbed forest and riparian edges, often excluding native plant species.



### Sweet pea shrub (*Polygala myrtifolia* excl. cv. 'Grandiflora')

Sweet pea shrub is a perennial evergreen legume-like shrub less than 2m tall with three-petalled purple and green flowers borne January to December. It forms dense stands which vigorously displace native coastal shrub species, but can also invade forest margins, scrubland, cliffs, open land, islands and tussock land.



### Sweet pittosporum (*Pittosporum undulatum*)

Sweet pittosporum is a shrub or small tree varying in height with wavy, prominently margined leaves, white bell shaped flowers and orange globular fruit. It is an invader of pasture, roadsides, coastal bluffs cliffs and open scrubland but is also able to exploit gaps and edges to invade mature forest. Invasion is associated with reductions in native plant species richness and cover. It has the potential to hybridise with New Zealand *Pittosporum* spp. with impacts on genetic diversity possible.



### Sydney golden wattle (*Acacia longifolia*)

Sydney golden wattle is a shrub or small tree up to 10m tall with cylindrical spikes of pale creamy-yellow flowers produced in July-August. It is capable of forming dense monospecific stands in open or disturbed habitats, out-competing other plant species by casting shade and altering other soil characteristics. Dune systems and other priority ecosystems including gumlands and islands are most at risk. It accumulates dense layers of nitrogen-enriched but slowly decomposing leaf litter which can alter soil organic matter content, soil microbial communities, soil moisture and nutrient cycling. It also has the potential to facilitate invasion of other exotic plant species through elevated soil nutrient levels.



Note: Rules 7.7.10.1.1 to 7.7.10.1.6 come into force on 1 April 2020 for Sydney golden wattle.

### Taiwan cherry (*Prunus campanulata*)<sup>4</sup>

Taiwan cherry is a deciduous tree up to 8m with red bell-shaped flowers July-September followed by glossy red cherry fruit. It invades native forest and is likely to displace native plants. Closely related species are highly invasive overseas, and known to reduce plant functional diversity in invaded forests. It has the potential to substantially increase in abundance and distribution in natural ecosystems throughout Tāmaki Makaurau / Auckland due to bird-dispersed introduction pressure.



### Tasmanian ngaio (*Myoporum insulare* incl. hybrids)

Tasmanian ngaio is a large shrub to small tree with oval leaves, white flowers with purple dots borne between September and June and long, purple fruit. It competes with native coastal plants and hybridises readily with closely related and culturally important native ngaio (*M. laetum*), potentially affecting the gene pool of the native species. It is toxic to humans and livestock.



### Tradescantia (*Tradescantia fluminensis*)

Tradescantia is a monocotyledonous perennial herb with shining leaves and white flowers borne December-January. It rapidly forms dense ground cover layers up to 60cm tall, inhibiting regeneration of native species by preventing seeds from reaching the ground and by smothering seedlings. Native forest seedling species' richness and abundance decrease exponentially with increasing tradescantia biomass. In the long-term this has the potential to lead to non-replacement of the forest canopy, and transformative impacts on forest structure, composition and function.



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<sup>4</sup> Excludes sterile cultivars 'Mimosa' and 'Pink clouds'. Auckland Council may consider other applications for exemptions over the life time of the plan where cultivars can be shown to be sterile.

### Tree lupin (*Lupinus arboreus*)

Tree lupin is a perennial shrub up to 3m tall yellow pea-like flowers borne in inflorescences up to 30cm long during October-May. It mostly invades coastal ecosystems and is associated with changes to dune plant community composition and the declines of some native plant species. It is a nitrogen-fixer and accumulates leaf litter, which may alter nutrient cycling and facilitate the invasion of other exotic plants through increased nutrient availability. The flowers provide attractive floral resources for honey bees and other pollinators, and are known to increase the seed set of other pest plant species occurring nearby.

Note: Rules 7.7.10.1.1 to 7.7.10.1.6 come into force on 1 April 2020 for tree lupin.



### Tree of heaven (*Ailanthus altissima*)

Tree of heaven is a deciduous tree, up to 25m tall with a strong unpleasant odour, pale green-white flowers borne in spring, and seeds encapsulated by twisted papery sheaths in autumn. It is a coloniser of disturbed open habitats, capable of forming dense stands which suppress other plant species through chemical inhibition. The leaf litter is high in nitrogen and decomposes rapidly, altering nutrient cycling regimes in some ecosystems, and facilitating the invasion of other weed species. Root intrusion can damage culturally important archaeological sites.



### Tuber ladder fern (*Nephrolepis cordifolia*)

Also known as: tuber sword fern

Tuber ladder fern is a tuft-forming fern with hairy potato-like tubers and upright evergreen fronds (30-120cm tall). It is able to form dense stands which suppress the regeneration of native plant species in forest habitats, rocky outcrops, coastal scrublands, wetland and riparian margins.



### Tutsan (*Hypericum androsaemum*)

Tutsan is a semi-evergreen perennial shrub up to 1.5m high bearing yellow flowers with large green sepals from November to February and berries ripening from green to black. Invasion of forestry plantations and pasture can result in a loss of productivity, and cause photosensitisation and dermatitis in livestock. It is a fast growing coloniser in native forest, riparian areas and scrub, forming dense stands that crowd out native plants and suppress seedling recruitment. Large stands have the potential to affect habitat availability and food resources for native and pest animals.



### Variegated thistle (*Silybum marianum*)

Also known as: milk thistle

Variegated thistle is a large annual or biennial prickly thistle up to 2.5m tall with variegated leaves and purple flowers borne late spring-summer. It competes with valued pasture plants and may be toxic to livestock, causing drowsiness, staggering and diarrhoea. It is most competitive in poor pasture; advantaged by drought, disturbance and high fertility soils.



#### Rules:

7.7.10.1.10 All occupiers of land in the Auckland region must destroy all variegated thistle plants on their land.

A breach of this rule is an offence under s154N(19) of the Biosecurity Act.

The purpose of rule 7.7.10.1.10 is to require the occupier of a place to take specified actions to eradicate or manage the pest or a specified pest agent on the place.

**Velvet groundsel (*Roldana petasitis* syn. *Senecio petasitis*)**

Velvet groundsel is a perennial shrub up to 2m tall with large lobed leaves and composite yellow flowers borne in large bunches during winter-spring. Its dense growth can shade out and exclude other plant species, potentially altering the composition and structure of invaded plant communities. Coastal ecosystems and forest edges may be most at risk from invasion. It is poisonous if ingested and may cause skin irritation when handled.



**Water primrose (*Ludwigia peploides* subsp. *montevidensis*)**

Water primrose is a perennial emergent aquatic plant with creeping or floating stems and yellow flowers borne from November-February. It invades damp pasture around margins of invaded water bodies, displacing valuable forage species. It forms dense mats in freshwater and damp habitats; displacing other vegetation, clogging waterways, impeding water flow and reducing dissolved oxygen levels. It may also adversely affect fish, invertebrates and other fauna through habitat alteration.



**Wild ginger (*Hedychium gardnerianum* and *H. flavescens*)**

Also known as: kahili ginger (*H. gardnerianum*), yellow ginger (*H. flavescens*)

Both wild ginger species are herbaceous perennial plants that can grow up to 3m tall with large green leaves and orange berries. Kahili ginger has yellow flowers with red stamens and yellow ginger has creamy flowers. They form dense stands preventing recruitment and suppressing up to 90% of native vegetation in forest ecosystems, potentially resulting in long-term impacts on forest composition. Invasion may alter decomposition and nutrient cycling patterns, and increase erosion in the long-term through loss of canopy.



### Woolly nightshade (*Solanum mauritianum*)

Woolly nightshade is a perennial shrub or small tree, up to 4m high with grey-green furry leaves, violet flowers and dull yellow berries. It forms dense stands in disturbed scrub or forest, roadsides, pasture margins, urban areas and riparian margins, inhibiting the regeneration of native plant species in invaded sites. It can displace pasture grasses and clover, reducing food availability for stock, and will colonise clear-felled areas in forestry plantations. Direct or indirect contact with the plant may cause skin irritation and respiratory problems.



### Yellow bristle grass (*Setaria pumila*)

Yellow bristle grass is an annual grass 25-35cm tall, with green or yellow-green leaves, often red-purplish near base and a cylindrical seed head consisting of numerous spikelets. It is a major pasture pest; some farms may have up to 40% yellow bristle grass cover. It is palatable to stock during its vegetative stage, but of poor nutritional value and may be associated with mouth ulcers and lesions in cattle. Stock will avoid the grass following seed head emergence (January-May). It can reduce feed production by up to 20%, resulting in reduced milk production and costs associated with supplementary feed and pasture renovation.



Stefan Iefnaer

### Yellow flag iris (*Iris pseudacorus*)

Yellow flag iris is a perennial herb up to 1.5m tall with sword-shaped leaves and yellow flowers borne from September-December on erect stalks. It can invade waterlogged pasture where it can impede drainage and is poisonous to livestock. In wetlands and freshwater ecosystems it can form monocultures which displace other plant species. Dense rhizome mats can impede or alter stream flow and morphology through increased sediment accumulation.



### Yellow guava (*Psidium guajava*)

Yellow guava is a shrub or small tree up to 3m tall with white or yellow flowers borne July-March and yellow fruit. Fast growing invasive species likely to be advantaged by climate change. Fruit have the potential to exacerbate impacts from animal pests including feral pigs and possums by providing a food source.



### Yellow passionfruit (*Passiflora ligularis*)

Yellow passionfruit is a vigorous perennial liane with showy white, purple and pink flowers produced in summer and edible fruit in autumn-winter. Where invasive overseas this climber covers the tree canopy, suppressing growth of other species. Closely related taxa invade native vegetation in Aotearoa / New Zealand, competing with native plants and potentially facilitating exotic mammal invasions through the provision of food resource. It is likely to be advantaged by climate change and impacts may be moderately high if extensive invasion occurs.



Dick Culbert

### Yellow water lily (*Nuphar lutea*)

Also known as: brandy bottle

Yellow water lily is a perennial aquatic plant with both floating oval leaves and submerged very thin leaves. Flowers are yellow and held above the water surface in spring-summer. Dense mats may suppress submerged aquatic plants by shading and can have indirect impacts on plankton by providing refuges from fish predation. Invasion can alter patterns of nutrient storage in sediment and may reduce dissolved oxygen levels in the water column.



Rohan Wells, NIWA



